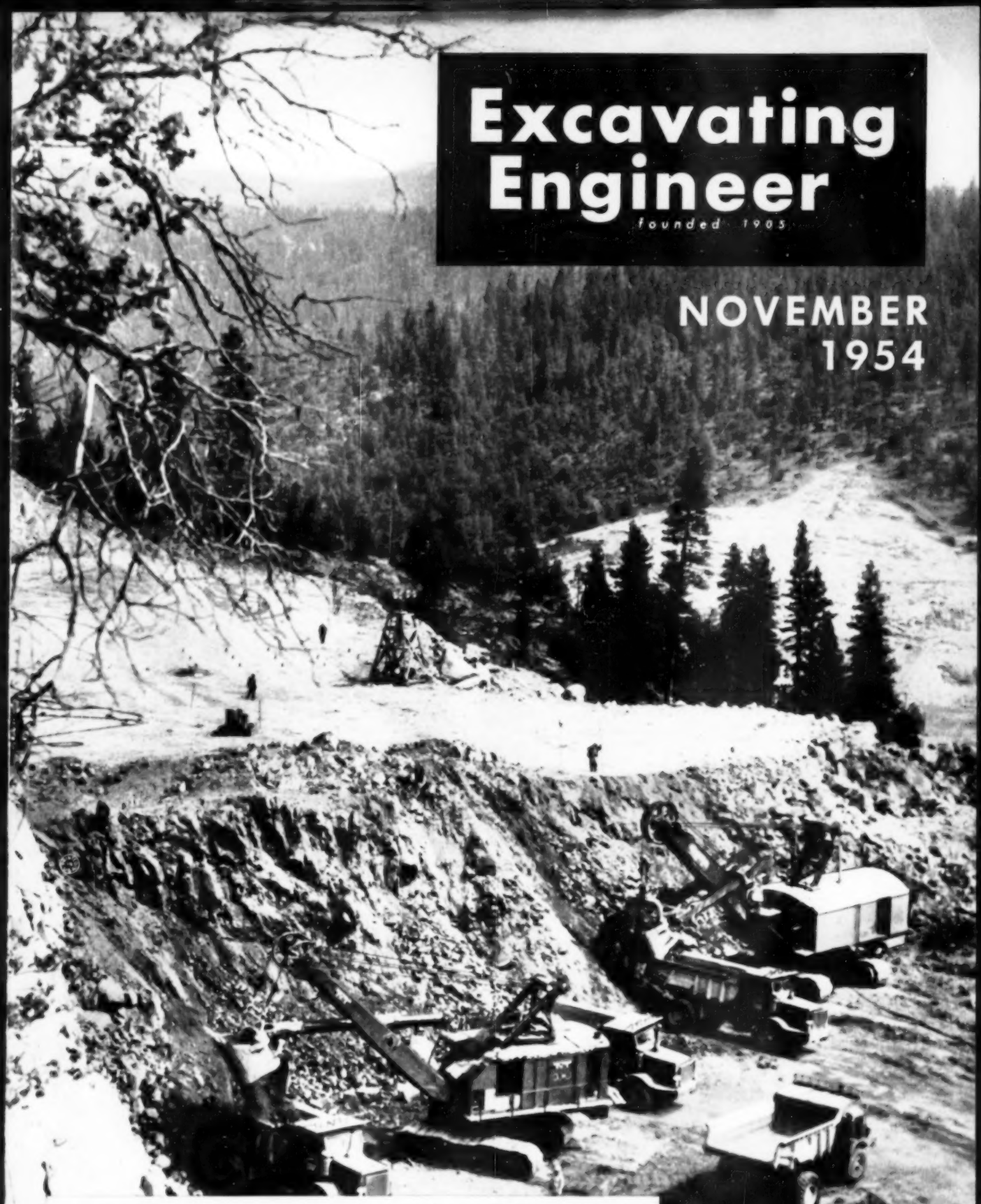
Excavating Engineer

founded 1905

NOVEMBER
1954



Double spotting of end-dump trucks for two shovels working quarry face maintains a high output schedule set up by Guy F. Atkinson Company, contractor for $7.2 million Cherry Valley Dam in mile-high mountains near Yosemite National Park. See article on page 14.

The facts speak for themselves . . .

they say BUY BUCYRUS-ERIE

THESE FACTS ABOUT BUCYRUS-ERIE MACHINES	MEAN THESE ADVANTAGES
1 Single piece revolving frame features strength without bulk.	*You get a rigid machinery base, strong enough to withstand bending and twisting stresses, yet light enough for a fast easy swing.*
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5 Simple Individual Design for each model in the line.	*You get faster digging cycles because there's no excess weight to waste power or slow down performance; lower maintenance costs and longer machine life because no parts are undersize or overstressed to "stretch" models.* 47E54C

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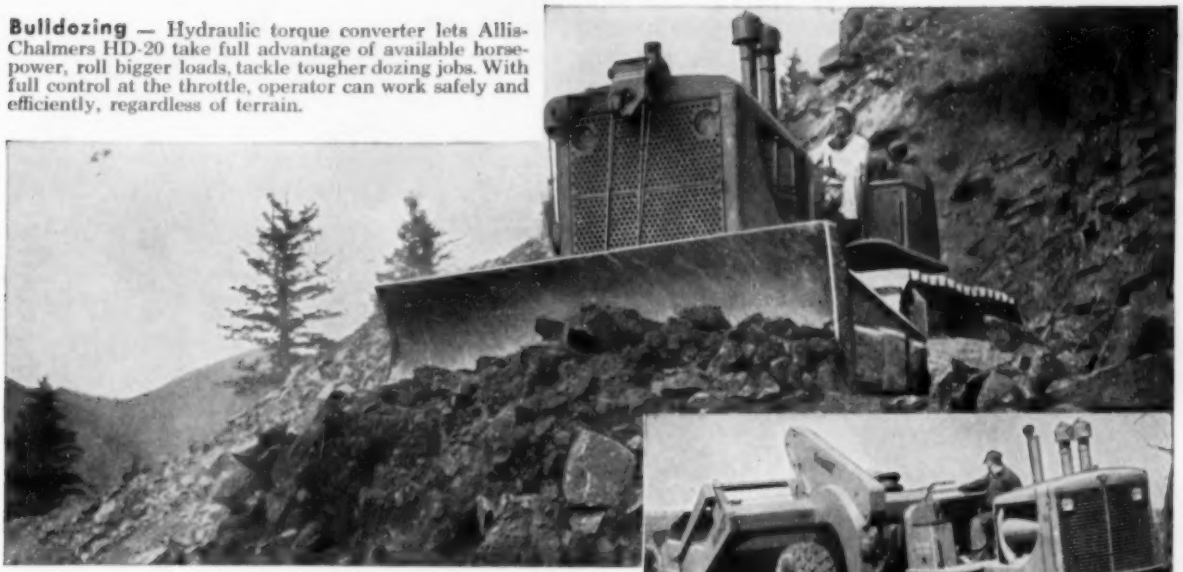

Bulldozing — Hydraulic torque converter lets Allis-Chalmers HD-20 take full advantage of available horsepower, roll bigger loads, tackle tougher dozing jobs. With full control at the throttle, operator can work safely and efficiently, regardless of terrain.

AN ALLIS-CHALMERS REPORT

How hydraulic torque converter drive improves big tractor performance—increases job output

Allis-Chalmers offers the only crawler tractors that are capable of exerting maximum drawbar pull *at all times* . . . under all load and terrain conditions . . . without gear-shift guesswork.

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This eliminates most shifting . . . leads to far more work done in a continuous work cycle . . . far longer equipment life.

• • •

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HD-20 — WEIGHT — 41,000 LB • 175 NET HP AT FLYWHEEL
HD-15 — WEIGHT — 28,000 LB • 135 NET HP AT FLYWHEEL

Pulling — Hydraulic torque converter drive actually multiplies torque up to four and one-half times . . . develops tremendous drawbar pull to start the load smoothly . . . and automatically accelerates to the highest speed that conditions permit, in either high or low range.

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ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

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1

"Tandem hauling and two-way dumping are two profitable advantages of the Easton side-dump idea"

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says **MILO CROUSE, Manager of Operations**
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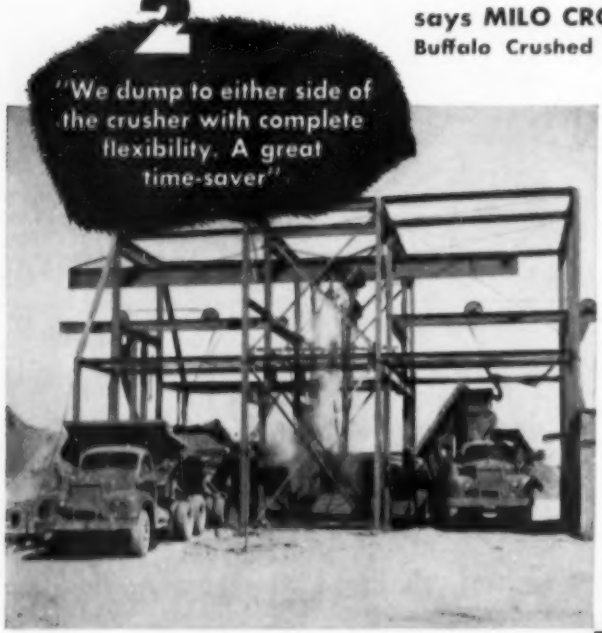

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IN THIS ISSUE

Allis-Chalmers Mfg. Co. 1

American Hoist & Derrick Co. 53

Bethlehem Steel Co. ..... Cover III

Bucyrus-Erie Co. ..... Cover II, 8–9, 13, 46–47, 54–55

Caterpillar Tractor Co. ..... 58, Cover IV

Colorado Fuel and Iron Corp. 10

Drake-Williams-Mount 61

Easton Car & Construction Co. 2

Electric Steel Foundry Co. 48

Ensign-Bickford Co., The 12

Erie Strayer Co. 51

Euclid Div., General Motors Corp. 35

For Sale (Classified) 63

General Motors Corp., Euclid Div. 35

Hayward Co., The 56

International Harvester Co. 32–33

Iowa Mfg. Co. 11

LaCrosse Trailer Corp. 31

Leschen Wire Rope Div., H. K. Porter Co., Inc. 29

Macwhyte Co. 36

Northwest Engineering Co. 5

Owen Bucket Co., The 45

Phoenix Products Co. 57

Porter, H. K. Co., Inc. Leschen Wire Rope Div. 29

Roebling's Sons Corp., John A. 10

Sauerman Bros., Inc. 41

Shell Oil Co. 6–7

Wellman Engineering Co., The 39

Westinghouse Air Brake Co. 43

Excavating Engineer

founded 1905

CONTENTS

Volume XLVIII No. 11 **November, 1954**

High, Wide and Wet—by Ray Day 14

High in Yosemite National Park, veteran firm places almost seven million yards of material to build Cherry Valley Dam. Power, flood control structure must go up in brief work seasons.

Short Pipelines Can Be Tough 21

A Hammond, Indiana, pipeline contractor thrives on some of most obstacle-infested territory to be found anywhere. Example: Starting a products line through 5½ miles of quicksand.

Minneapolis: Major River Port To Be 22

Construction of St. Anthony Falls Lower Locks and Dam is big step in plan to bring river barge traffic to Minneapolis' industrial north sector. Program will cost almost $30 million.

News from the Field 30

Name General Manager for National Safety Council 30

Name District Engineer 30

Road Direction Markers Aid New Jersey Motorists 30

National Safety Council Offers Monthly Magazine for Builders 31

President Names Members of Highway Advisory Committee 31

Mackinac Span Project Reported on Schedule 34

Wisconsin Turnpike Found Not Feasible at Present 34

Euclid Gives Out Big News in Two-Day Preview 37

G-E Passes 100 Million Mark in Small Motors Production 38

Another Big Dredge Launched at Falls Bay, Canada 38

New H. O. Penn Machinery Co. Plant Opened in October ... 39

Using Refuse for Runway Solves City's Disposal Problem 39

Gar Wood Builds Large Bulldozers 40

Tractor-Mounted Rock Ripper Helps Out on Road Job 40

Baltimore Harbor Tunnel Cost Estimates Outlined 41

Equipment You Ought to Know About 42

New Trade Literature 57

Not in the Contract 59

Notes from the Manufacturers 62

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2. A Northwest Truck Crane pours concrete for D. W. Winkelman at Boardman Branch near Youngstown.
3. R. B. Potashnick grading near Ravenna.
4. A Peter Kiewit Sons Co. and Condon Cunningham Co. Northwest pouring overpass piers at Ohmstead Falls.
5. A Northwest Dragline owned by Terry & Wright handling some of the drainage work at Wauseon, Ohio.

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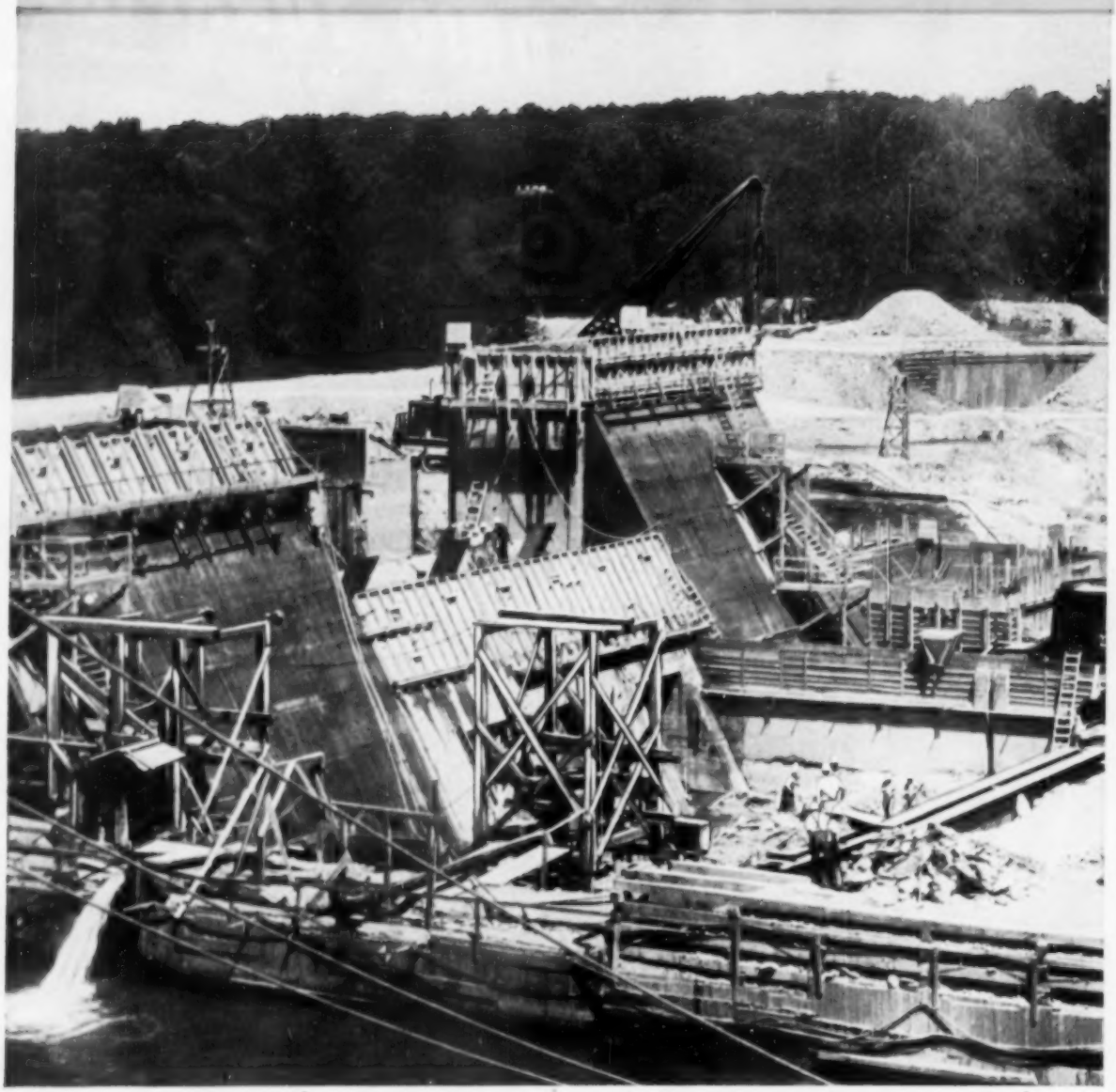

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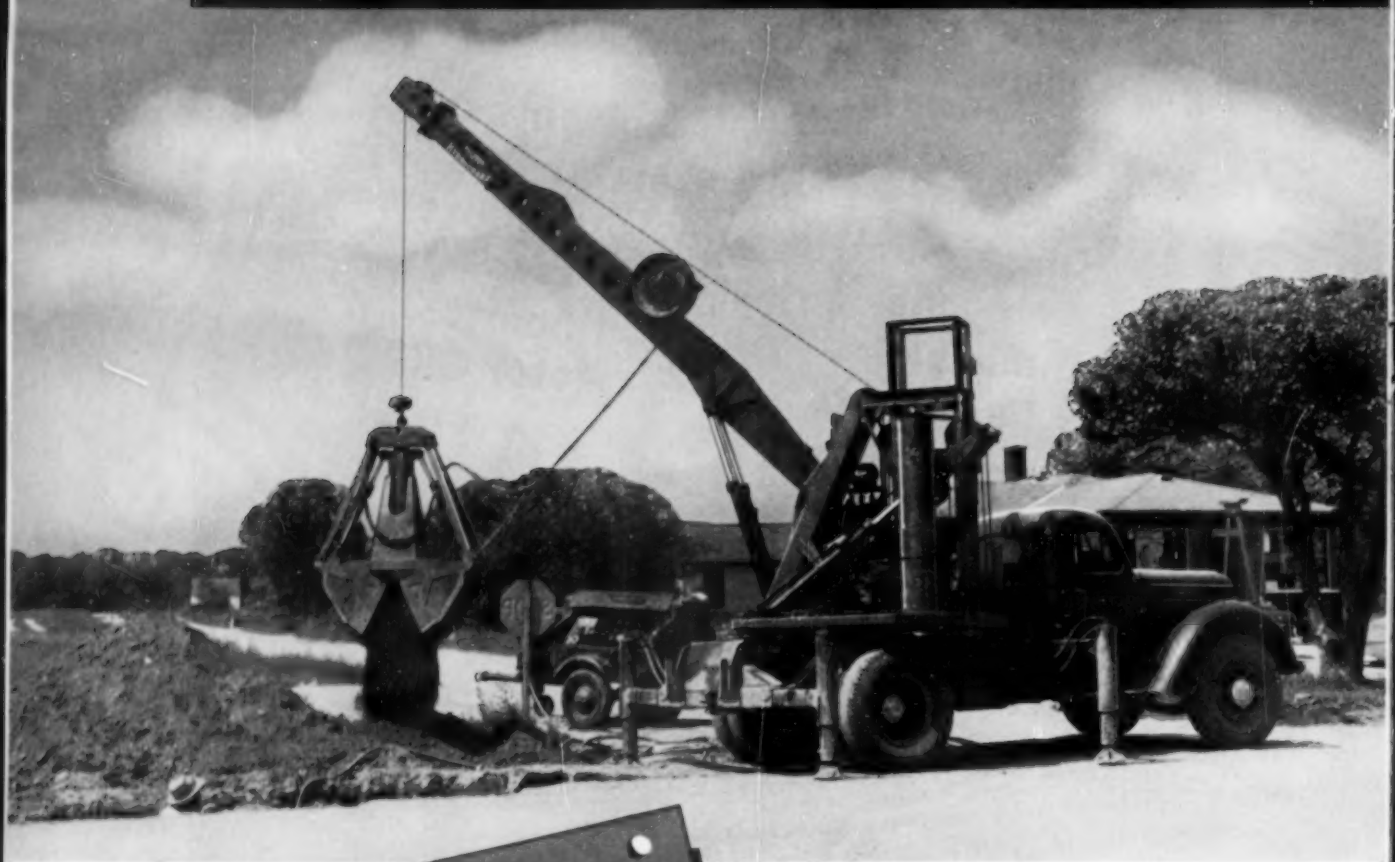
*A diligent search could uncover only one piece of Vepco's equipment NOT using a Shell product.

Those Who Use It . . .



Here the Hydrocrane digs a manhole. Every crane function is fully hydraulic—boom hoist, line hoist, swing, boom telescope, outrigger set and retract, and bucket close.

MEMO

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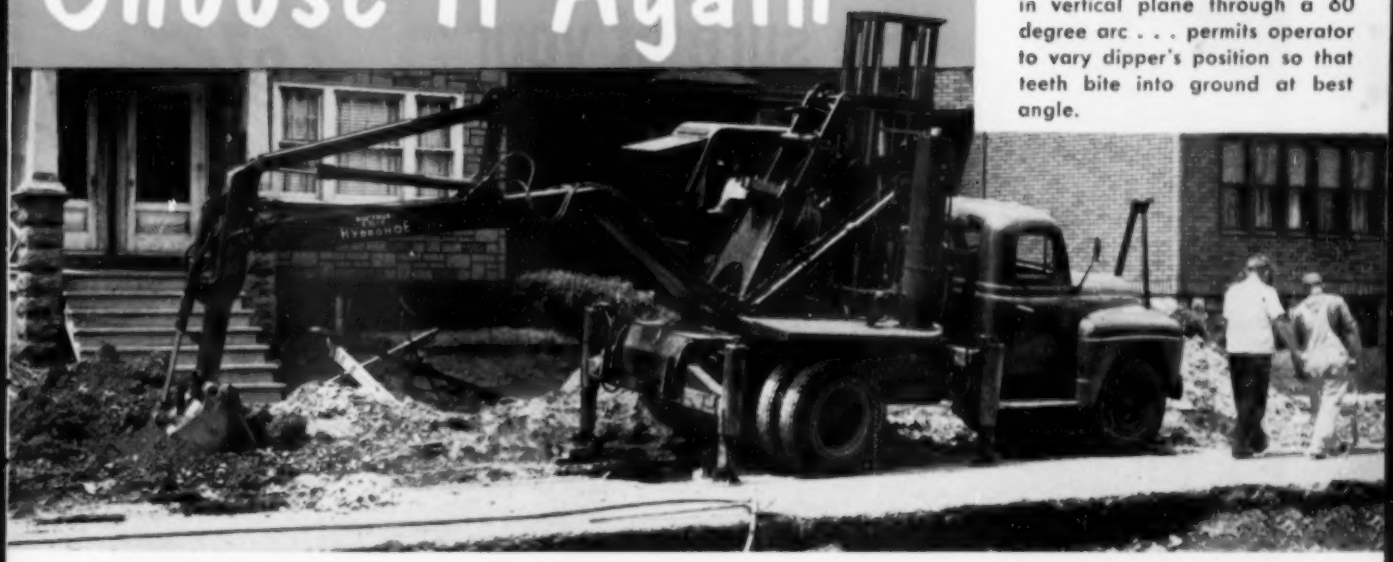

Compact Hydrohoe speeds trench job on city street. New wrist-action dipper is hinged to rotate in vertical plane through a 60 degree arc . . . permits operator to vary dipper's position so that teeth bite into ground at best angle.

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Cedarapids

Built by IOWA

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Now you can use safety fuse and caps in multiple blockhole secondary blasting, with the added features of remote firing.

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Fuse and caps are prepared in the usual way, with the addition of a connector crimped on the free end of the fuse. This connector protects the fuse powder train during rain storms, and is slotted to provide a firm, positive connection for the Quarrycord.

After the blockholes are loaded, the Quarrycord is run from hole to hole, and inserted into the slot of each connector. The top of the connector is pressed down over the Quarrycord, locking it firmly in place. The free end of the Quarrycord is then run out to a spot where it can be easily lighted.

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Established 1836

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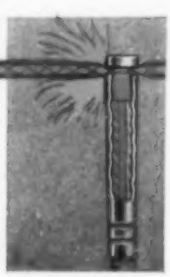
ENSIGN-BICKFORD *Quarrycord*

for lighting Safety Fuse in Secondary Blasting



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50-R

Whatever your blast hole drill requirements, Bucyrus-Erie builds *the machine* to meet them.

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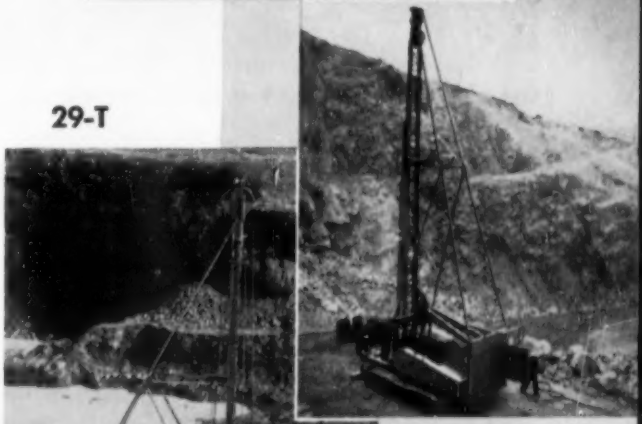


29-T

27-T

22-T

50-T

BUCYRUS ERIE

South Milwaukee, Wisconsin

Excavating Engineer
founded 1905 NOVEMBER, 1954

Eucs and water monitor work on rock fill, at left, while tractors with rooter teeth and rollers pack down impervious core.

High, Wide, and Wet

by Ray Day

High in Yosemite National Park, veteran firm places almost seven million yards of material to build Cherry Valley Dam. Power, flood control structure must go up in brief work seasons.

WHEN the San Francisco Public Utilities Commission opened the bids for construction of Cherry Valley Dam, low bidder was a familiar one on the West Coast. Guy F. Atkinson Co. of South San Francisco had won the contract at a price a $7.2 million.

Ahead lay important problems for the veteran firm. Winter hits early in the mile-high mountains near Yosemite National Park, where Cherry Valley Dam is located. The work season lasts only from May to November.

With a fraction of the working year at their disposal, the Atkinson crews had signed up to place three million cubic yards of impervious core, three million yards of rock fill, and 700,000 yards of filter material.

Such a task calls for high production schedules if equipment is not to be tied up too long at the mountainous site. To A. H. Steiner, project manager, the job is old hat. "Gus" is the man who ramrodded Dorena Dam near Cottage Grove, Ore., several years ago and fought soggy borrow pit conditions which limited earthwork to 70 working days that year.

Combination Dam

Cherry Valley is a combination hydroelectric and flood control structure being built jointly through a financial arrangement between the U. S. Government and the Public Utilities Commission of San Francisco. Because its 268,000-acre foot reservoir will hold back some flood damage from Cherry Creek (the stream has been known to reach 18,000 cfs) the Federal Government is sharing about $9 million of the total $14.4 million total cost bill.

The dam is an interesting composite earth and rock fill structure 320 feet high above the stream bed, and 2,635 feet long at its crest. The site is near existing Lake Eleanor Reservoir, and is only seven airline miles from the main

Bucyrus-Erie 150-B shovel loads out blocky, broken granite to 18-yd. Euclid truck.

water supply reservoir at Hetch Hetchy. The job is 58 miles back in rugged mountainous terrain from the nearest railhead at Chinese Camp, Calif. That road has been the despair of many a truck driver struggling up the long grades with such loads, for example, as part of a knocked-down power shovel.

Main purpose of the dam is to round out the water collection system which serves San Francisco from the high mountainous area near Yosemite National Park. Cherry Valley Dam will do an important job by storing water for the Modesto and Turlock Irrigation Districts. This storage, necessary because the irrigation districts are guaranteed 730 cfs minimum flow, will also conserve water in Hetch Hetchy Reservoir for direct municipal use.

Design of Cherry Valley was dictated strictly by economics. Extensive exploration work showed plenty of decomposed granite at the site to make a big

Scene is Steiner's "farm" where Cat tractor with plow aerates impervious borrow pit to help rid soil of excessive moisture.

Cherry Valley Dam is a composite earth and rock fill structure. Some material that could not be used in building the dam is end-dumped by Euc into nearby gorge.

Onan electric light plant shown at left supplied 5,000 watts of night lighting energy to battery of four Joy Challenger wagon drills for drilling work at upstream quarry.

center core. The material had enough clay and silt with its particles to bind it together, under heavy compaction, into an impervious mass. More-over, it was about half the in-place price of rock fill —the traditional material for these high mountainous dams—so some compromise was indicated. The result is a dam whose impervious core takes up almost half the total volume of the structure.

Actually there was enough impervious d.g. and clay at the site to do the dam entirely with that material. Impervious material would need flatter slopes, however, so the dam would therefore have had a broader base. This would have required a longer diversion and outlet tunnel, and contract prices for tunnel excavation run high. The final design is a beautiful compromise between the various types of excavation.

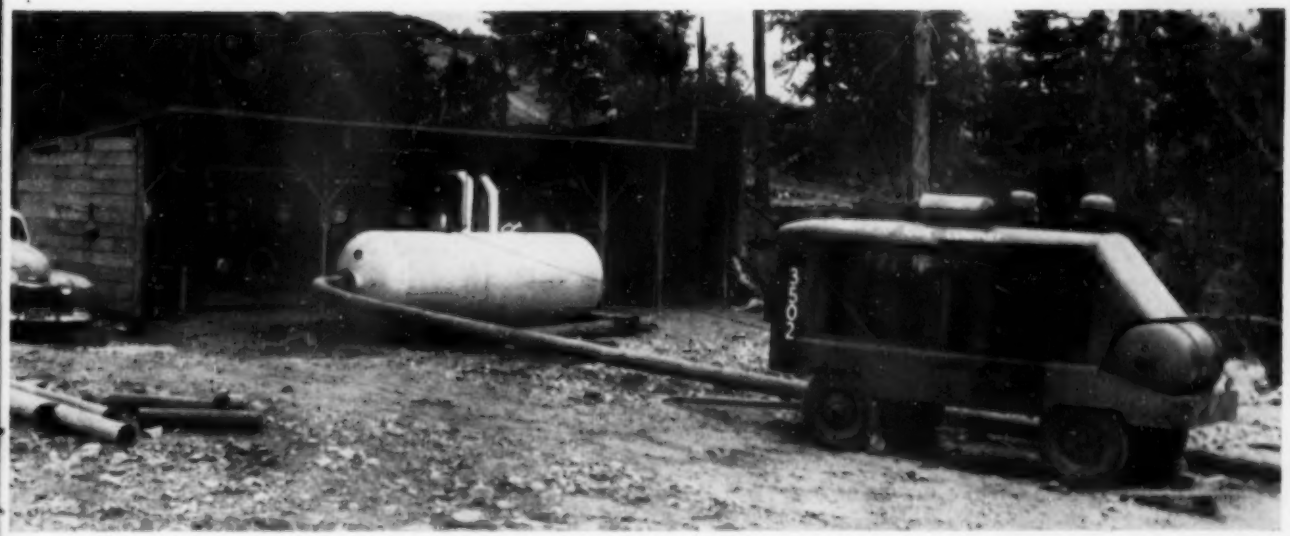
Early Contracts Let

In order to get the site ready for the main dam building job, several smaller preliminary contracts were let during the 1953 season. The site was stripped and pressure grouted at a cost of $752,000, by Owl Trucking and Construction Co. of Compton, Calif. A diversion tunnel 16 feet in diameter, lined with a 15-ft. 4-in. diameter steel pressure liner, and containing a future power stub was built for $630,000 by a joint venture, consisting of Ralph Bell and Ukropina-Polich-Kral of San Gabriel, Calif. By last August the dam was ready to start. Atkinson's bid was the successful low one. Some work was done during the 1953 season after Atkinson's prompt start.

The general setup of the job is one of its most interesting aspects. The dam is in a remote location. That makes it necessary to have a permanent-camp: mess hall, main camp, trailer camp, large equipment repair and service facilities, and even a school house, where from 50 to 60 young cat-skinners learn reading, writing, arithmetic—and all about borrow pits. One of the haul roads even doubles as an airstrip. It's a concession to the remoteness of Cherry Valley's location.

Construction-wise, the job resolves itself into several principal divisions. There's a large earthmoving spread on the impervious core. This activity includes both a crew down on the dam and one in the borrow pit supplying that material.

Since Cherry Valley is a composite structure and contains three million cu-



Battery of Gardner-Denver 550 cfm compressors, aided by an Ingersoll-Rand 600 cfm Gyro Flo, supply compressed air to quarry.

bic yards of granite rock fill, that operation, too, is sizable. There are three quarries. Two now are in operation in addition to two filter pits. Down on the dam, that operation, too, has its own setup. The heavy pieces of rock have to be end-dumped in thick lifts and consolidated by high pressure hydraulic monitors.

Since the dam also has filter zones, equipment working on that material forms a third division. And to service all that activity, there is, of course, the usual mechanical force, fueling and service crews, a complete field office force, a safety division, and a supply department whose knowledge of logistics is being broadened by the construction of Cherry Dam.

Early diversion of the stream had top-notch priority because only by getting the broad, weathered bedrock base of the dam exposed could the fill start up rapidly. Upstream and downstream cofferdams, built with regular material going into the dam, were so designed that they became part of the upstream and downstream toes. These cofferdams were thrown up rapidly by hauling equipment now serving the other zones of the dam. By midsummer of 1954 Cherry Creek had been diverted through a temporary 16 x 17 foot opening in the concrete intake structure. The entire base of the dam was then fully open for major earthwork.

Impervious Core A Bearcat

From the word go, material in the impervious borrow pit has been exceptionally wet. If that material had been drier than it was, it's almost certain that Atkinson's crews would have moved three million cubic yards this season. They had the equipment and the haul roads to do the job, and Atkinson's management isn't scared of three million yards any time. Except for that "If" the job would have become a one-year "miracle."

The main borrow pit, which contains this impervious decomposed-granite material, is approximately 500 feet higher in elevation than the dam, and about 1½ miles away on a dead haul. The one redeeming feature about the borrow pit is the fact that its elevation favors downhill hauling. Those loaded Caterpillar DW20's roll down the haul road at a speed approaching 40 miles per hour. They will even pass a passenger automobile if they have to.

Actually a secondary problem in the

McCoy Sheepsfoot rollers, drawn by International TD-24 tractors, are specially ballasted to raise unit weight to 70,000 lbs.

One of two intelligiant hydraulic monitors at Cherry Valley used water at 100 psi pressure to consolidate dumped rock.

borrow pit became apparent first. That problem was heavy granite boulders which lay exposed on or near the surface of the ground. It was impossible, of course, to handle this float rock with conventional tractor equipment. It was objectionable from the engineer's viewpoint to even consider using it in the impervious zone. There was only one thing to do; move in with dozers and grubbing rigs, get these boulders out of the way and stack them where they could do the least damage.

The primary problem—that of excess moisture in the material—didn't really show up until the borrow pit was fairly well opened. Hopes were running high, even among Atkinson's top brass. A slug of equipment had been assigned. There were 21 Caterpillar DW20's. There were eight 25-yd. Southwest trailers pulled by 20TD Euclids, equipped with Hydratarders and filled with dirt by an Allis-Chalmers HD-20-drawn Euclid loader. This Euclid machine was equipped to skim 18 inches of the material off the surface of the pit, and load it at high speed into the hauling units. The job was arranged so that the Southwest wagons worked on a morning shift and then retired on the swing shift in favor of the other rigs.

When it became apparent that the borrow pit was exceptionally wet, Atkinson's management did three things immediately. Deep drainage ditches from 15 to 20 feet deep were dug by a Bucyrus-Erie 54-B dragline, to drain off bedrock springs. Dozers stripped off and extended the borrow pit area in an effort to expose more material to the natural effect of air and sun drying. A considerable amount of extra manipulative equipment in the form of Ateco rippers, spring toothed harrows, moldboard-type plows and any other type of equipment which would aerate the soil, was all brought in. When *Excavating Engineer* visited the project, Steiner's "farm," as he called it, was opened up for about 200 acres.

Effective as these measures were, however, they were not sufficient to keep the huge equipment spread busy. The material had a tenacious tendency to hold moisture many percentage points higher than its optimum compaction requirement. The fast-moving rock fill operation by comparison had been able to stay so far out ahead of the impervious core that drilling and powder crews had cut down the number of their work hours. Atkinson's management decided reluctantly to drop back to a more sedate pace in keeping with the rate of borrow pit drying. Operations will continue at that pace until November snows shut down the job for the winter.

Processing of impervious material in the dam core is a routine operation, with the exception that fairly heavy rolling is necessary to develop proper densities.

Working against high face, Bucyrus-Erie 88-B shovel loads Euc with waste material.

Job specifications allow Atkinson a great deal of latitude so far as compaction methods are concerned, but the results are clearly outlined. Optimum density is based on a modification of the AASHO requirement, so that there is 57,375 foot pounds of compactive effort used on a test sample, as against 12,375 foot pounds for the standard AASHO test. Specifications call generally for 100% of field tests to show 90% of this optimum compaction, and 50% of the tests showed 94% of the optimum, or greater. There are some figures in between which hit the middle points.

To develop this compaction, Atkinson is using four McCoy and two Gebhard sheepsfoot rollers, specially ballasted to develop a total weight of 70,000 lbs. These rollers are drawn either by Caterpillar D8's or International TD-24's. There is also one 100-ton Southwest Compactor, as well as a 50-ton Wisco pneumatic roller.

Along the immediate vicinity of rock outcrops at the abutments, where it is impossible to reach the earthwork with heavy compaction equipment, Gardner-Denver air tampers are being used. Everything, in fact, is being done to assure a dense, tight barrier across the Cherry Creek Valley.

Heavy Rock Operations

Almost in direct contrast to the moisture troubles with dirt work, has been the quarrying and placement of granite rock. While that phase, too, presented some difficulty, it never slowed the job, and rock work has always paced ahead of the dirt. Three factors have influenced this. The job is just as well equipped for rock production as it is for dirt. The rock schedule is set at 10,000 cubic yards per day, which is enough to let that operation stay in line with other work.

At the present time, two quarry spreads are active, and a sizable central air compressor setup has been necessary to service them. One quarry upstream, for example, is served by four stationary Gardner-Denver compressors of 550 cfm capacity, driven by 125-hp electric motors. A downstream quarry uses three stationary Joy Model E compressors, each rated at 750 cfm. These are driven by 150-hp electric motors. Air from these batteries of compressors is sent out to the job through six and eight-inch diameter steel pipelines after passing through large air receivers. Other compressors on the job include an 1,100-cfm Sullivan, three Gardner-Denver 500-cfm portables, and several Ingersoll-Rand 600-cfm Gyro-Flos.

Auxiliary electric power is furnished by two 1,000-kw General Electric generators, powered by five Caterpillar D397's. These Diesels are rated at 400 hp each, and supply a dependable flow of energy which can be used in practically any combination to run generators and compressors.

Rock Is Fissured

The rock at all quarry sites consists principally of a hornblende granite, which is extremely abrasive, and in some cases quite hard. The rock is fissured and broken, and shows a dismaying tendency to break out in large chunks.

Quarry work is typical at each spread. One large hilltop quarry, for example, makes use of four Joy Challenger tricycle-mounted drills capable of boring a four-inch-diameter powder hole. Loading equipment consists of a Bucyrus-Erie 88-B Diesel power shovel with a 3½-cubic yard Esco dipper, and a Bucyrus-Erie 120-B electric shovel with five-yard Esco dipper. Eighteen cubic yard Euclid end-dump trucks are the hauling vehicles at this and all other quarries. There are enough of these machines on the job so that they can be assigned as needed.

At the upstream quarry, a new Bu-

Caterpillar DW-20 scraper is push loaded in borrow pit by Caterpillar D8 pushers.

This is heavy machine repair shop with its five entry bays where large units of equipment can move in for major service.

cyrus-Erie 150-B electric shovel is doing the loading, also two 18 yard Euclids. Four Joy Challenger drills also are used there. Drilling and shooting methods are similar for both quarries.

Perhaps the worst problem in regard to quarry operations has been the difficulty in finding some type of connector to fasten 20-foot lengths of steel together in order to drill holes up to 60 feet deep in the abrasive material. Steel breakage was terrific in the early stages in the work. The drill crew tried everything. They even called in a metallurgist of the firm supplying the steel. Coincidentally, a mining company, at about the same time, was having the same trouble with the same type of drilling, near Livingston, Mont. It had taken its problem to the Coeur d'Alene Mining Co. in Idaho. This firm tried the reverse buttress type thread and coupling built like a pipe sleeve. When that was brought to Cherry Valley Dam, the steel breakage problem was greatly improved.

Use Military TNT

Some of the secondary breaking is done with two-pound blocks of military TNT such as demolition teams use in blasting a beachhead. These blocks are simply dobied on large boulders, and although the concussion is terrific, they do demolish the oversize material in short order.

Using tungsten-carbide drill bits, the large hammer-type drills are sinking four-inch holes on centers which range from 10 x 10 to 14 x 14. In spite of the abrasive quality of the rock, bit life has been satisfactory to Atkinson's management, and the drill machines, too, have stood up. All bit sharpening, heat treating and steel threading is done in a special shop at the dam site. It is possible frequently to use a drill bit through approximately 12 bit sharpenings.

Powder loading conditions are wet. Where bad ground water conditions are found the holes are blown dry with air and then loaded to a point above the water mark with 60% special Columbia gelatin-type powder. Where dry conditions prevail, Columbia 40% bag powder is being used. Most of the powder business has been Columbia's although in certain cases considerable DuPont, Hercules and some other makes have been represented. The powder-rock ratio is approximately 0.6 pound per cubic yard and the various shots are hooked up in a series in parallel method. On all deeper holes Primacord is used for detonation; otherwise, ordinary electric caps and 50-ft. leg wires are used. In most cases the shots are delayed between rows by Western Minimax millisecond delays.

The broken granite is being loaded by the Bucyrus-Erie power shovels and hauled by Euclid end-dump trucks to the top of the 30 foot thick end-dumped berms on the dam. These 30-ft. courses correspond to various berm locations on the plans. With the help of a dump man, who spots trucks at the proper location, they back up close to the edge and dump their loads off the end of the fill. The top is maintained in level condition by a Caterpillar DW-20 four-wheel drive experimental dozer as the dumping progresses.

Then comes one of the most spectacular operations of all: the consolidation of dumped rock by the addition of three times its volume in water. There are two large Intelligiant hydraulic monitors mounted on skids for that purpose. These monitors use water at 100 psi pressure from an eight-inch water delivery line, with the monitor nozzle necked down to put out a terrific blast of water at four cubic feet per second. Two Fairbanks-Morse vertical turbine pumps, driven by 400-hp motors, supply this water to the monitors. Purpose of the hydraulic sluicing operation is not only to consolidate the rock but to wash all fines down between the rock interstices.

The rock operation is rolling along right on schedule, although it has been geared down slightly to meet the reduced schedule on the earthwork.

Major Equipment Upkeep Job

The upkeep of equipment in such a remote location has called for somewhat better parts planning than would have been necessary had the job been set up 15 miles out of San Francisco, where major equipment distributors are located. The Atkinson organization has been known and looked up to for years for the upkeep and care of its machines, and this general policy is reflected in the camp setup for that vital construction phase.

There is a large heavy equipment repair shop with five entry bays where large units of equipment can move in for major service. There is a parts room which would probably be the envy of many equipment distributors. Special mechanics are assigned to prevent trouble in obvious places. For example, an electrician works full time on the periodic weekly checking and cleaning of armatures, contact points, and electric connections on equipment which must operate under dusty conditions.

The usual mobile service truck equipment makes its periodic calls in the field so that lubrication, fuel and so on can be assured. There is a separate tire maintenance shop and careful records of tire life are maintained. As the probable shut down during the 1954-55 winter season will undoubtedly be a good excuse to

Continued on page 56

Short Pipelines Can Be Tough

A Hammond, Indiana, pipeline contractor thrives on some of most obstacle-infested territory to be found anywhere. Example: Starting a products line through 5½ miles of quicksand.

THE Morrison Construction Co., Hammond, Ind., is a firm that doesn't have to lay pipe from coast to coast to find the toughest operating conditions in the country. Right in its own back yard—the highly industrialized Hammond-East Chicago, Ind., area—Morrison encounters conditions that make other pipeliners throw up their hands in horror.

Currently Morrison is putting seven different pipelines through this territory where J. R. Morrison, executive vice-president, observes, "You can hardly stick a pick in the ground without striking another pipeline."

The 41-mile East Chicago-to-Harlem Avenue sector of the 195-mile products pipeline Morrison kicked off in late July, for the Badger Pipe Line Co. system, offers these conditions typical of those encountered on any contract in the area: (1) seven river crossings, (2) seventy-six cased crossings up to 450 feet long, (3) well-pointing the right-of-way 100% in Lake County, Ind., (4) triple use of pipe detectors on the entire

Below: International TD-24 and Caterpillar D7 sidebooms lower 320 feet of 12-in. pipe to wellpointed trench.

Above: One of 76 crossings is bored by International UD-9 powered Crose borer. Bore ran 220-ft.; one was 450-ft.

right-of-way, and (5) first 5½ miles all in quicksand.

Industrial expansion in the Hammond-East Chicago area has been so rapid and is so concentrated that no accurate maps are available locating all of the thousands of pipelines in the area. Morrison sends out a crew with pipe locators to cover the entire right-of-way when the plans are drawn. Different men and different type locators are used a second time when the right-of-way is cleared. And a third crew using still other detectors works right ahead of the

Continued on page 56

Minneapolis: Major River Port To Be

Construction of St. Anthony Falls Lower Locks and Dam is big step in plan to bring river barge traffic to Minneapolis' industrial north sector. Program will cost almost $30 million.

THE industrial heart of Minneapolis lies above historic St. Anthony Falls on the Mississippi River. Once a source of water power for flour and lumber mills, the Falls have played an important part in the growth of this midwest city. But, on the other hand, by blocking navigation upstream, the Falls have prevented Minneapolis from assuming any importance as a port on the Mississippi.

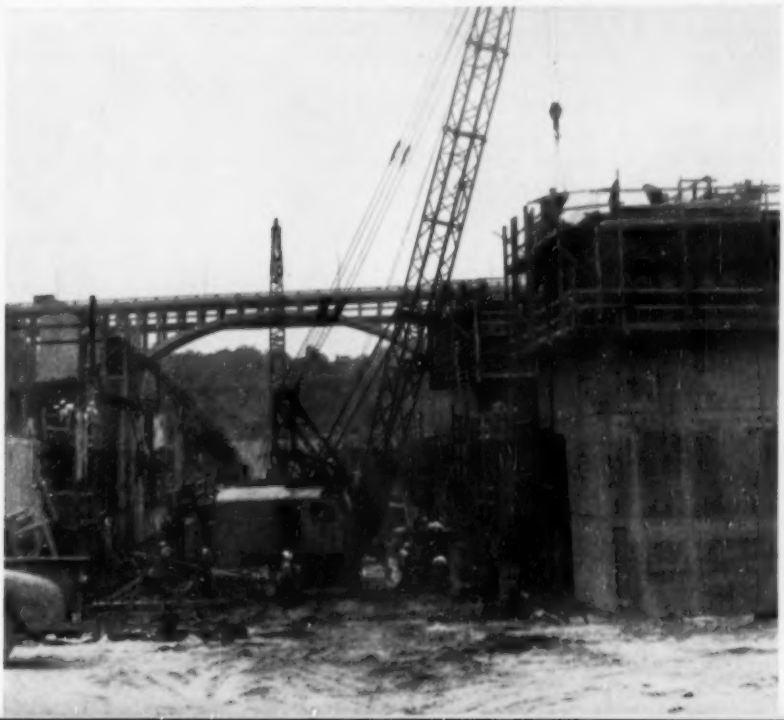
High banks lining the river below the Falls make expansion of present inadequate dockage facilities impractical. Civic leaders long have focused eyes on the area above the Falls as an ideal spot for a harbor. The St. Anthony pool is 12 miles long and has approximately 20 miles of flat shoreline suitable for industrial development. A plan to raise river

View shows Minneapolis lock construction. Three cranes—two Bucyrus-Erie 54-B's and Manitowoc 3,500—handle buckets and forms.

barges over the Falls to this vast potential harbor started on its way to reality when Congress in 1948 voted funds to begin work on a system of locks through the Falls. The upper harbor plan, developed by the Army Corps of Engineers, St. Paul District, will extend the existing 9-foot channel in the Mississippi from its present limit at the Northern Pacific bridge to a point near the north limits of the city of Minneapolis, a distance of about 4.6 miles by river. The project includes extensive dredging of the river bottom; construction of a low-

Above: International truck serves cranes with 2-yd. Gar-Bro concrete buckets. Below: A 12-in. Layne deepwell 3,750 gpm pump helps dewater a small sump pond.

Below: Northwest crawler crane stands in 56-ft. by 400-ft. lower lock chamber. Pair of locks will be needed to elevate barges to 12-mile-long St. Anthony Pool.



Land wall of lock is 33-ft. thick at base, including 12-ft. intake conduit; channel wall is 15-ft. thick. Area between land wall and river bank will later be backfilled.

will not infringe on the spillway capacity of the existing upper dam which is considered adequate. No alteration to the upper dam will be necessary except to provide an opening for the lock structure and slight modifications to secure a uniform crest elevation. Extreme care will be taken not to disturb a protective concrete cutoff dike built in 1876 to prevent undercutting of the limestone ledge over which the river drops.

The proposed work in the portion between the upper lock and the upstream limit of the project will be principally dredging and bridge alterations. The channel will be 150-feet wide with a turning basin, approximately 500-feet wide and 1000 feet long, located downstream from the Lowry Avenue Bridge. The material to be dredged in general consists of sand, gravel, clay, and boulders. In addition, ledge limestone will be encountered in the area between the upper lock and Hennepin Avenue Bridge. Seven bridges cross this reach of the river. Guide fence protection will be required at Hennepin Avenue bridge and Third Avenue bridge. The Great Northern Bridge near the Union Station will be provided with a lift span.

Design of the upper harbor project was worked out after careful studies by the Corps of Engineers. Much of the preliminary work was accomplished before the start of World War II. A complete topographical survey of the upper habor was made, and considerable number of borings had been taken. A geological report on the foundation conditions at the lock sites and the dredging area was prepared by Dr. G. M. Schwartz of the University of Minnesota, head of the U.S. Geological Survey for the State of Minnesota.

A study of conditions which will exist when the upper and lower lock are constructed was made with a hydraulic model simulating the river between the Hennepin Avenue Bridge and the lower Northern Pacific Railway Bridge. This model, built to a scale of one to fifty, was constructed at the Hydraulic Laboratory of the University of Minnesota. Current conditions were simulated to discover the most desirable locations for the locks and dam. Model studies were also made on the spillway and submergible Tainter lock gates to determine the proper shape of crest, the sill profile, and length of apron for the lower dam. The details for the filling and emptying systems for the locks were developed in other models. Due to the fact that the structure must be built on a rock formation known as St. Peter sandstone, which disintegrates readily when exposed to seepage or running water, and because gravity walls at the lower site would have reduced the critically needed spillway area, the dry dock type lock was adopted. The cross section of the lock is an integral structure. The lock floor is considered a beam on an elastic foundation, with the side walls designed as cantilevers. Barring cracks in the concrete this type of construction will positively insure that no water can seep from the lock chamber to any point beneath the walls, and thus it is fairly certain that the walls cannot be undermined.

Present estimated cost of the harbor development project is $29,795,500. The lower lock and dam now stand 60% complete and the whole project is 22%. Federal funds for work remaining have not been appropriated. Completion of the entire project, originally scheduled for 1957, will be delayed until further appropriations are available.

In the meantime, Minneapolis is going ahead with raising bridges in the upper pool area. The city has spent $800,000 to raise the Broadway Avenue bridge 19 feet and will remodel several other crossings.

The Johnson-Kiewit combine is speeding completion of the lower lock and dam after a series of reverses. In order to carry out the provisions of the contract, cofferdamming of the river by several stages is required. Originally it was planned to perform the work in three cofferdams, extending over four construction seasons, but due to unanticipated foundation conditions, and unusual river conditions, it has been necessary to revise the plan to four cofferdams, and the work will extend over five construction seasons. About two-thirds of the river must be clear to pass spring run-off, and one-third for summer, fall, and winter flows. Stage I of the revised plan consists of constructing a cofferdam approximately one-third the width of the river from the left bank. Stage III encloses the proposed lock along the right bank. Stages II and IV cover an island cofferdam, with the river allowed to flow through the completed portions of the structure.

Voids Are Created

Foundation conditions have presented difficult problems in putting in the dam foundations. Original borings indicated that the St. Peter sandstone formation in the river bed was a homogenous material of uniform density. Excavation in the formation reveals horizontal seams four to six feet on centers. If these seams are exposed the sand is displaced and voids are created. Several means have been tried to prevent the opening up of such areas. The first measure was to encircle the work area with steel sheet piling. To perform this operation it was necessary to jet a trench to within about two feet of the total depth and to seat the piling in the undisturbed sandstone by driving. This method, although effective, did not cut off all of the flow. There was leakage through the inter-

locks, and some spreading or separating of the interlocks. In such cases additional sheets were placed to lap the openings, but this method did not eliminate the flows. It was difficult to obtain a true vertical trench by this jetting method, and, therefore, it was necessary to lap the piling at the closure location. In order to dry up certain areas it was necessary to resort to well point systems. This was especially effective in the deep key section along the non-overflow dam and the upstream face of the spillway. There were breakthroughs, however, and when they occurred in the keyway area it was necessary to backfill and seal off the void area created by the flowing water, with chemical grout. Chemical grouting was also used to solidify the disturbed sand in the areas within the structure where the steel piling was jetted into the sandstone.

High water has also caused considerable trouble and delays. The adopted height of the Stage I cofferdam was based on the high water data recorded since 1907. Quick rises in level of the river flooded the Stage I cofferdam on three occasions.

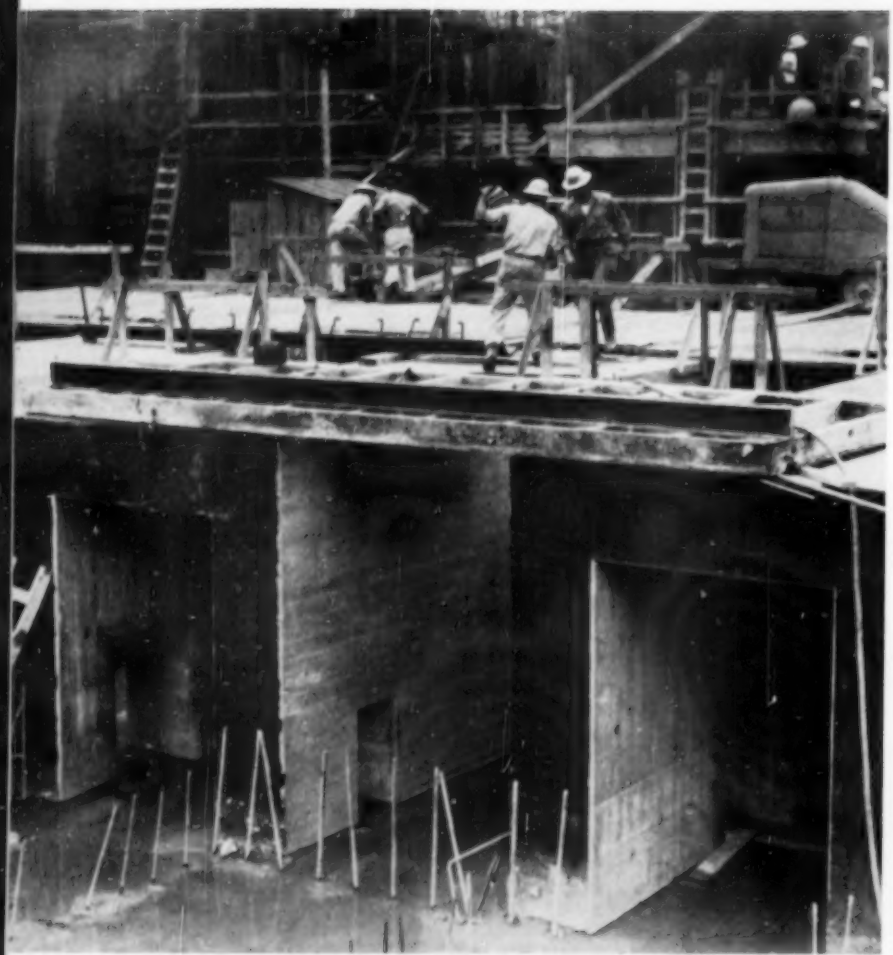
Heavy equipment used on the job includes:

1—1½ yd. Northwest 6 crane-clamshell-dragline
1—¾ yd. American crane-clamshell-dragline
1—2½ yd. Manitowoc 3500 crane-clamshell-dragline
1—2½ yd. Northwest 80-D shovel
2—2½ yd. Bucyrus-Erie 54-B crane-clamshell-dragline-shovel
2—Cat D-8 dozers
1—International TD-18 dozer
1—International TD-6 dozer
3—10-ton L-190 International flat bed trucks for hauling concrete

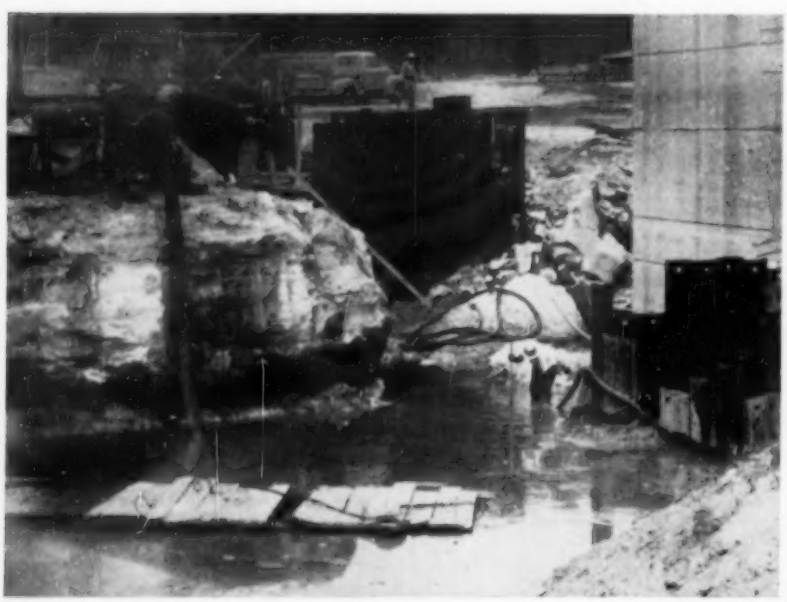
The Bucyrus-Erie 54-B cranes and a Manitowoc 3500 Speedcrane do most of the concrete handling. Pairs of 2-yd. Garbro concrete buckets are hauled on flatbed Internationals to the lock structures from the batching plant located across the river. Access to the cofferdam around the lock is provided by a 228-ft. three-span temporary bridge set on two 28-foot diameter cells.

The concrete mixing plant is equipped with a C. S. Johnson 200-ton Octo-bin with bulk cement hopper; cement elevator and weigh batcher; and equipped with a pair of Koehring heavy duty 2-yd. tilting mixers and a 3,200 bbl. cement storage bin. Sand and gravel

View of harbor development area shows position of locks, dam and channel. Some 1.4 million yards of dredging will be needed.



Concrete going into relatively thin-walled structures like these emptying and filling laterals contains as much as 6.7 bags of Lehigh portland cement per cubic yard.



Jaeger 8-in. centrifugal pump starts work on seepage water. Upper Harbor Development finish depends on fund availability. Corps of Engineers worked out design.

er lock and dam to replace the present lower dam; construction of a lock through the present upper dam; protection of bridge piers; construction of guide walls and navigation aids; removal, extension and alteration of various pipe crossings, cables, sewers, pump intakes and other obstructions; alterations to seven existing bridges to provide minimum clearance for traffic; and provision for a 500-foot wide, 1000-foot long turning basin above the Falls.

Work on the project began in 1948 with excavation of a 9-ft. channel in a 2,250-ft. reach of the river extending from the present head of navigation at the Northern Pacific Bridge to a point below the site of the lower dam. About 327,000 cubic yards of material consisting of a heterogeneous mixture of sand, gravel, clay, glacial boulders, broken up limestone blocks and slabs, and ledge limestone were removed under two contracts awarded Dumbar & Sullivan Dredging Co., Detroit, Mich., on bids of $105,000 and $689,730. The second of these contracts was completed in November 1950.

Make Start in July

Proceeding up stream the next phase of work is construction of a lower lock and dam. Under a contract let to Johnson-Kiewit Associates, these two units were started in July 1950. Johnson-Kiewit is a joint venture of the Al Johnson Construction Co., Minneapolis, and Peter Kiewit Sons' Co., Omaha, Neb.

Original amount of the Johnson-Kiewit contract, DA 21-018-eng-242 let June 1950, was $5,508,968. The contract called for completion of the job by December 1953. Revisions in the contract, necessitated by unexpectedly difficult foundation conditions and periods of high water, have brought up the amount to more than seven million dollars and pushed back the target date for completion to February 1956. Paid dollar amount to date is $4,715,000.

The lock and dam structures, now under construction, are located downstream of the present lower dam and extend in a straight line across the river at right angles to the flow. The two units were laid out to tie into the existing power house on the left bank. They will replace the present lower dam. The lock with a chamber 56 feet by 400 feet clear, has a normal lift of 25 feet. An upper gate bay for an auxiliary lock is provided so that a second lock can be built at a later date in the event navigation requirements dictate its need.

The dam is gravity type and will con-

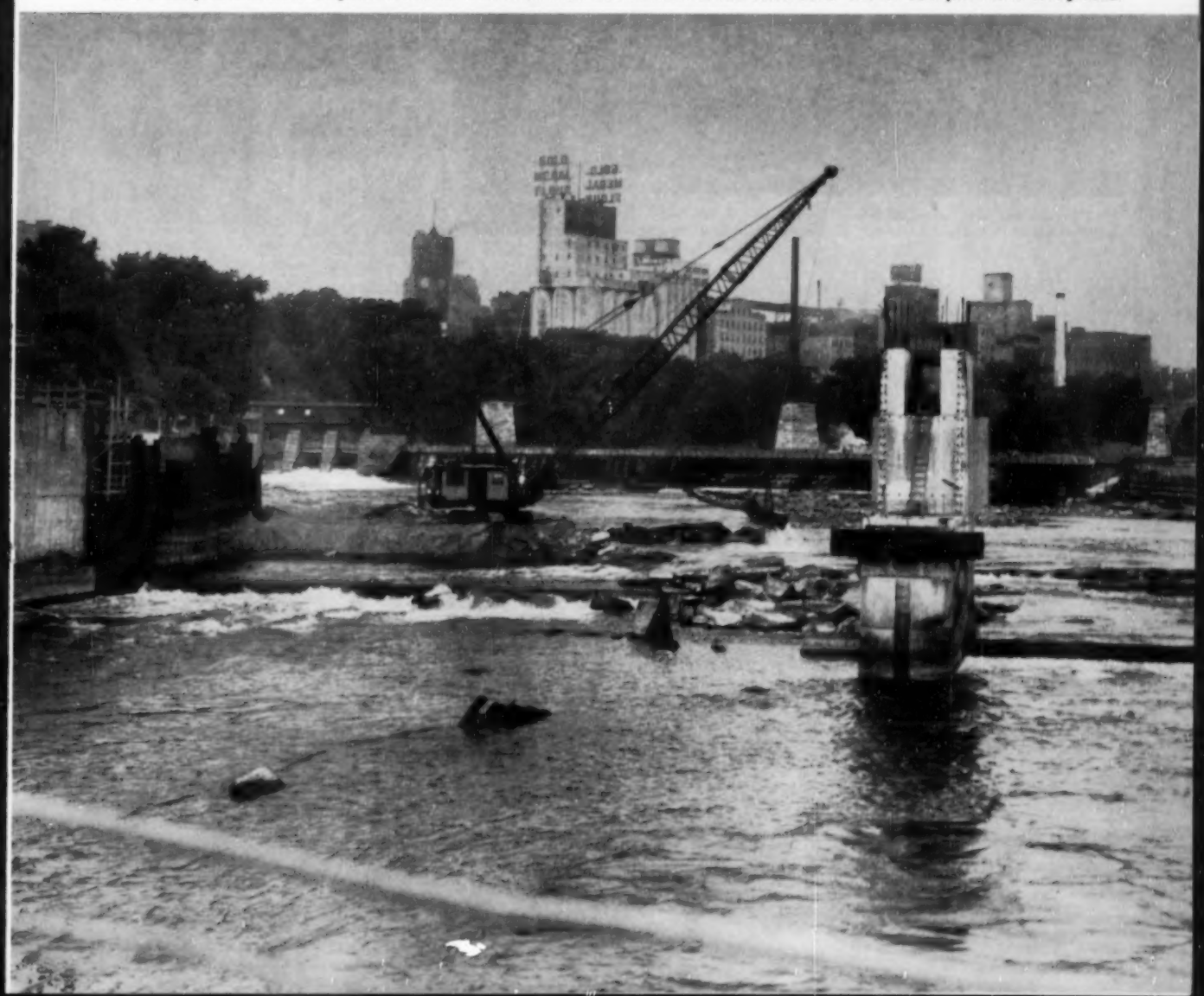
tain three tainter gates, each 56 feet long and 20.5 feet high. Under normal river conditions these three tainter gates will pass all flows. To assist in passing high flows, a tainter gate will be placed at upstream end of the lock and will be used as a service gate. During normal operation of the lock, the tainter gate will submerge for passage of boats into and out of the lock. The dam itself is designed to pass a maximum flow of 46,600 cfs.

Total height of the dam from top of the pier parapets to bottom of the shear key is 112 ft. The dam will measure 290 feet in length, plus an additional 230-foot length of non-overflow section on the left side of the river.

When the lower lock and dam are completed next year, a major portion of the upper harbor project will remain to be done—construction of the upper lock and 1,080,000 cubic yards of dredging. Work in the intermediate pool consists mostly of dredging a suitable approach channel between the upper and lower locks. The material to be excavated is substantially the same as encountered in the lower pool area. In the early stages of planning, two railroad bridges and one highway bridge crossed the river in this reach. Subsequently, one railroad was removed and the superstructure for the highway bridge dismantled. The other railroad bridge is a stone arch structure. One pier and two spans of this bridge will be replaced with a steel span in order to make room for the new channel. Field observations and hydraulic model investigations indicate that extremely hazardous navigation conditions can be expected in the intermediate pool unless corrective measures are provided. The location and alignment of the existing upper dam wasteways located on the left side of the river, aided by the skewed position of the piers of the stone arch railway bridge, direct the flow into the navigation channel causing a serious cross-current. To provide relief from this condition, a training wall will extend from the downstream end of the upper lock river wall to a point about 1,100 feet downstream and will be slightly curved to deflect the river toward the lower dam. The present lower dam located in this reach of the river will be removed upon completion of the lower lock and dam.

The upper lock will be located immediately below the non-overflow section of the present upper dam on Upton Island. This lock has the same horizontal dimensions as the lower, but the lift at this site is to be 49 feet, the largest step on the Mississippi, in order to make possible the surmounting of the main Falls and the existing upper dam. The lock

Here a Bucyrus-Erie 54-B dragline excavates rock from river bed in front of the cofferdam. One of dam piers is in foreground.



Lock intake and discharge ports are set in floor to minimize turbulence during filling. Excavation in Mississippi river for lower lock and dam came to 104,000 yards.

Northwest crane swings wooden lateral form to international truck for ride to the job. Contractors—a Johnson-Kiewit joint venture—maintain a carpenter shop at site.

are carried to the top of the 75-ft. structure on a 300-ft. conveyor with a 30-in. belt. A ¾-yd. American crane equipped with a Wellman clamshell feeds the conveyor. Top capacity of the plant is 90 cubic yards per hour. From 1,800 to 2,000 yards are placed per week.

A typical 215 cubic yard batch of mass concrete uses:

cement, type II (low heat)	829 lbs.
water	240 lbs.
coarse sand	1668 lbs.
blending sand	255 lbs.
gravel 3" to 1½"	2703 lbs.
gravel, 1½" to ¾"	1980 lbs.
gravel, ¾" to No. 4	1327 lbs.
NVR air entraining agent	22 oz.

Amount of cement used in mixes for various parts of the dam and lock differs. Mass concrete placed below water line contains 4.1 bags of cement per yard of concrete; at water line and above, the quantity is increased to 4.4 bags per yard; in thin wall structures such as emptying and filling laterals, from 6.1 to 6.7 bags per yard.

Bulk cement is hauled in by trucks from nearby rail lines. Cement is supplied by Lehigh Portland Cement Co., and is rail shipped from Oglesby, Ill. Aggregates are obtained from Industrial Aggregate Co. from a gravel pit located approximately two miles from the site. Material is trucked to job.

Specifications call for concrete to be placed—not poured. Four Viber electric vibrators and two Ingersoll-Rand air vibrators are employed in the operations, keeping lateral movement of concrete in the forms down to a minimum. After allowing 48 hours for setting, the contractor strips the formwork. Water curing follows for 14 days.

Excavation for the lower lock and dam, handled by draglines and clamshells, amounted to 104,000 cubic yards. To remove water exposed sandstone, Johnson-Kiewit employed water jetting equipment which sliced the soft stone "like cheese." A Barnes 3-cylinder pump and a 3-cylinder Domestic pump supplied pressure through one-inch piping. For dewatering the foundations several Stang well-point systems were used at various times.

Approximately 3,300 tons of piling have gone into cofferdams and 1,000 tons into guidewalls. U. S. Steel MP 112 sheet-piling is used. Pile driving cranes are equipped with a McKiernan-Terry 9B-3 hammer and air is supplied by a 600 cfm Ingersoll-Rand Gyro-Flow compressor.

Project superintendent for Kiewit-

Continued on page 56

Leschen engineers tell you how to determine

Proper Use of Wire Rope with Wire Rope Core

First, what is it? It is a completely metallic rope made with a separate wire rope as a core, instead of the usual fiber core.

Why is it used? The steel core resists extreme pressure of individual strands on the core under very heavy loads. Here, a Red-Strand steel core rope substantially outlasts a fiber core rope. The extra steel in the core increases rope strength and safety by 7½%, compared with wire rope with fiber core. For occasional heavier loads this eliminates time and expense of changing sheaves, blocks and equipment to suit a bigger fiber core rope.

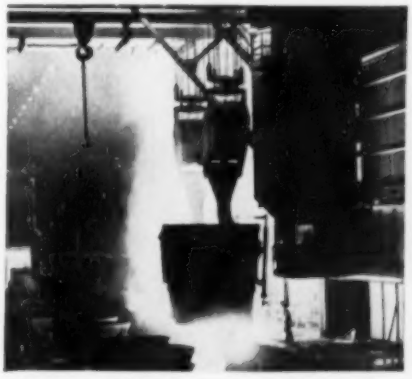
Red-Strand steel core rope answers the problem of crushing when rope is spooled in multiple layers on small diameter drums and winches—or when heavy loads are dragged or pulled. It also resists the damaging effects of excessive heat.

Where is it used? For extra strength and to resist heavy load pressure: on shovel and draglines—for drag, hoist, crowd and frequently boom ropes; on dredges, trench hoes, cranes and similar heavy duty equipment. To resist crushing: on bulldozers, scrapers, coal cutters, coal loaders, logging, arch and choker lines, and on rotary drilling lines. To resist excessive heat: on hot ladle cranes.

Which make should you use? Red-Strand steel core wire rope is highly recommended by its users for its higher-than-rated quality and longer-than-expected service. That saves money.

What's the next step? Talk to your Leschen distributor or Leschen field man. They're well qualified to answer your specific questions about Red-Strand steel core wire rope—or to help solve other wire rope problems. That means profit for you.

Severe stress, pressure and crushing occur on wire rope jobs like this and on rotary drilling drums and winches. On these jobs it pays to use higher-than-rated quality Hercules Red-Strand wire rope with wire rope core.



Where tons of molten steel are to be lifted by wire rope, great strength and resistance to intense heat are required. Here Hercules Flattened Strand wire rope with wire rope core delivers much longer-than-expected service.

Hercules Red-Strand wire rope made by

LESCHEN WIRE ROPE DIVISION

THE WATSON-STILLMAN COMPANY

(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)

St. Louis 12, Missouri

News from the Field

Name General Manager for National Safety Council

Maj. Gen. George Craig Stewart has been appointed general manager of the National Safety Council, a new post created to broaden top-level administration of the nonprofit accident prevention organization.

He assumed his new duties in November after his retirement from the Army became effective on the 31st of October. He is presently serving as director of the Office of Military Assistance in the Office of the Secretary of Defense.

Ned H. Dearborn, president of the Council, said the selection of Gen. Stewart was made after months of screening by a special Council committee of business and safety leaders.

"Gen. Stewart is highly recommended by his superiors and by those who served under him as a man who gets things done promptly, efficiently and pleasantly," Dearborn said. "His brilliant Army record in military transportation in combat and in general administration is testimony to the vigor and imaginative planning he can bring to the Council."

Dearborn said the need for expanded activity in highway safety is in part responsible for creation of the new general managership.

Gen. Stewart was born in Selma, Ala., in 1902. He was married soon after he was graduated from the U. S. Military Academy in 1923. He has three sons.

He advanced through the grades to his present rank of major general. Serving on the War Department General Staff when the United States entered World War II, he was assigned to the transportation corps in 1942 and rapidly gained a reputation as a transportation expert.

Gen Stewart's outstanding abilities in this specialized field were first demonstrated at the Oran landing in North Africa. He successively became transportation chief for the North African Theater of Operations, chief of the southern lines of communication for the invasion of southern France, deputy chief for the European Theater of operations, and chief for Army Forces in the Western Pacific.

In 1946 he became commanding general of Ft. Eustis, Va., and commandant of the Transportation School. The Korean War found him as assistant division commander of the 10th Infantry Division.

He served in Korea as commander of the Inchon base for the 1950 invasion landing, and as the assistant division commander of the 2nd Infantry Division. He returned to the United States in August 1951, and served on the General Staff of the Department of the Army. He was named director of the Office of Military Assistance, Office of the Secretary of Defense, in 1953.

Gen. Stewart has been twice awarded the Distinguished Service Medal, and the Silver Star Medal. In addition, he has received the Legion of Merit, the Bronze Star Medal, and several foreign decorations.

International TD-24 crawler and Bullgrader starts tough 100-mile road job in Olympic National Forest. Access roads are being built to log out tract of government timber.

Name District Engineer

Colonel Otto J. Rohde, age 41, who has been serving in the European Command in Germany, has been named District Engineer for the St. Paul District, Corps of Engineers. He succeeds Colonel A. H. Bagnulo who has been transferred to Iceland.

The new St. Paul District Engineer, a native of Sandusky, O., has been an officer in the Corps of Engineers since 1935, following graduation from West Point.

Colonel Rohde took over his St. Paul post on the 27th of August. As head of the St. Paul District, he will be responsible for Corps of Engineers river and harbor and flood control projects of the Mississippi River drainage basin in Minnesota and part of Wisconsin and Iowa, the Red River of the North drainage basin in Minnesota and parts of North and South Dakota, and those waters of the Lake of the Woods in the United States. He will also be responsible for contract administration on engineer military equipment and materials produced in the Dakotas and Minnesota.

Road Direction Markers Aid New Jersey Motorists

As an additional aid to motorists, the New Jersey State Highway Department has within recent months been attaching "North, South, East or West" direction designations, to its route markers.

At the present time the installations are at the junction of principal roads and important interchanges between routes. The heavily traveled interchanges, such as cloverleaves and overpasses have reflectorized signs, while

the none-reflectorized types are at other locations.

For long-distance visibility the reflectorized designs are (8-in. x 19-in.) in dimension and the others are 8-in. x 16-in.

The work is being performed by the Maintenance Division forces of the Highway Department. About 1,600 of the markers, it is stated, will have been erected before the end of the year. Much favorable comment has been received from motorists with respect to the safety factor provided by the new guides in permitting them to select quickly the lanes to be followed in reaching their destinations.

National Safety Council Offers Monthly Magazine for Builders

A handy pocket-size magazine devoted to promoting safe work habits on the job is offered by the National Safety Council.

Designed and edited expressly for construction workers, the magazine is entitled *The Safe Builder*. It stresses fundamentals of safety by spot-lighting the common causes of accidents and presenting tips on how to avoid them.

Humorous cartoons illustrate the text and make the little magazine easy as well as interesting reading. Quantity prices can be obtained by writing to: National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

President Names Members of Highway Advisory Committee

Appointment of four members to the Special Advisory Committee on a National Highway Program, headed by Gen. Lucius D. Clay, has been announced by President Eisenhower at the summer White House in Denver, Col.

Named to the new committee were: Stephen D. Bechtel, San Francisco construction company executive; David Beck, President of the AFL Teamsters Union; S. Sloan Colt, President of the Bankers Trust Co. of New York; and William A. Roberts, president of the Allis-Chalmers Mfg. Co., Milwaukee, Wis.

The committee, according to a White House spokesman, will work closely with the special Governors' Conference committee which also is studying ramifications of President Eisenhower's proposal for a greatly expanded highway construction program during the next decade. Along with the Governors' group, it will make recommendations to be used

Continued on page 34

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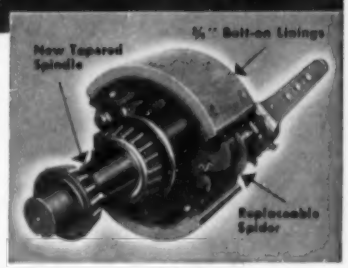
...gives you MORE!



Why *increase* your costs for trailer transportation, when you can get famous LaCrosse dependability at *savings of 5% to 25%* over other leading low beds! And look at all the EXTRA ADVANTAGES you gain with LaCrosse! *Up to 2000 lbs. more PAYLOAD capacity per trailer!* Bigger, more dependable brakes! Stronger "one-piece" gooseneck! New hi-strength tapered spindles, with *replaceable brake spiders!* All this — PLUS new lighter weight spoke wheels, more durable lengthwise decking. Call or write for complete money-saving facts today.

Biggest, Safest Brakes in the industry!

Husky 12¼" x 6" LaCrosse design, with constant rise S-cam and worm gear slack adjusters, insures cooler running, quicker stops — without slipping or grabbing. Equipped with tough ½" bolt-on linings which last up to 45% longer than other types — *plus* an exclusive new bolt-on spider which is easily replaced without removing axle assembly.

LC-29

Check Today!

LACROSSE TRAILER CORPORATION, LaCrosse, Wis.

☐ Rush complete information on LaCrosse trailers:
☐ Specifications ☐ Prices ☐ Delivery
☐ Send name of nearest LaCrosse Distributor.
☐ We may buy a _____ ton trailer about _____ (date)

Name _____ Title _____
Employed by _____
Address _____
City _____ State _____

LaCROSSE
America's Favorite LOW-BED TRAILER

NO TIME FOR DOWNTIME. Until this reservoir is completed, residents of Olathe will be paying premium rates for drinking water. That's why Contractor Lee Yerington says: *"On this dam I need plenty of power with a very minimum of downtime, and that's exactly what I get with my* INTERNATIONALS. *Take that TD-24 pusher, for example. 3500 hours on the meter and it still has original rails and never has had a major overhaul."*

"I needed durability ...my INTERNATIONAL'S delivered"

Contractor solves water shortage for Olathe, Kansas, with fleet of six INTERNATIONAL crawlers that never faltered in building a big dam and 160-acre reservoir

Water exporting business in Kansas City, Missouri, is due for a sharp slump due to the loss of 5,593 cash customers, the residents of Olathe, Kansas.

For many months past the thirsty population of Olathe has been supplementing the city's inadequate water supply by buying water by the tank car from Kansas City, but this condition is being rectified, and in a hurry.

The Yerington Construction Company, Parksville,

A TRAP FOR CEDAR CREEK is shown taking shape as the INTERNATIONAL TD-24 and B-170A scraper begins another loading cycle in the bottom of the new reservoir.

SOME BIG REASONS WHY earthmoving on this 450,000-cubic yard project moved at such a lively pace are apparent in this photograph: TD-24 speed that hauls heaped loads to the dam site at fastest traveling speeds. The positive rolling ejection feature of the INTERNATIONAL B-170A scraper spreads faster and completely cleans the bowl in the process.

Missouri, started construction of a new dam and 160 acre reservoir 2½ miles west of Olathe, and early in 1955 the city expects to be out of the water importing business.

Lee Dell Yerington is using a total of 21 pieces of equipment including 6 INTERNATIONAL tractors and scrapers to move 450,000 cubic yards of dirt and 60,000 cubic yards of rock on this hurry-up project, and here's what he says about his earthmovers:

"I like my INTERNATIONAL *equipment better than any other I have on this job—and for several reasons. I need plenty of power and plenty of durability and my IH crawlers deliver."*

Discover for yourself what this contractor has learned about how INTERNATIONAL crawlers and equipment deliver outstanding power and performance when the chips are down. Just call your INTERNATIONAL Industrial Power Distributor for your demonstration today. He'll bring the IH equipment you need to your job site anytime so you can get the lowdown on the IH rigs that mean more profitable business for you from here on in.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

ONE OF FOUR TD-18As the contractor used to hold a 7,000-cubic yard daily production average on this job is shown dozing dirt for a small temporary reservoir. This structure will be used in conjunction with the small natural lake as a reservoir until the new reservoir is completed.

UPGRADE WITH A HEAPED LOAD presents no problem for the Yerington's TD-24 with matched B-170A scraper hauling a solidly packed payload of 21 cubic yards.

INTERNATIONAL HARVESTER

INTERNATIONAL

FOR EVERY MOVE IN EARTHMOVING

Continued from page 31

by the President in the preparation of the highway program that he will present to the next session of Congress.

There has been no indication when the Clay committee will begin its study.

Mackinac Span Project Reported on Schedule

Given a "fair share of the breaks," the Mackinac Straits bridge project will meet its scheduled completion date of November 1957, according to a progress report prepared by Dr. D. B. Steinman, consulting engineer, and made public recently by Chairman Prentiss M. Brown of the Mackinac Bridge Authority. The five-mile toll bridge, being financed through a $99.8 million revenue bond issue, will link Michigan's upper and lower peninsulas at the Straits of Mackinac.

"Right now," Brown said, "there is a tower of concrete and steel seven stories high, half the size of a city block and weighing 100,000 tons, concreted into rock at the bottom of the straits and sticking up within 10 feet of the surface. This is the foundation for pier 17 in which the suspension cables will be anchored on the south side of the span," he said.

Brown said the 1954 objective is to build the foundations for the six key piers on which the central suspension span of the five-mile-long bridge will rest, and piers for the cables. He noted that "the largest armada of marine construction equipment ever assembled for one project" is in operation on the bridge. The equipment alone is valued at $4 million.

Hercules Model JXLD gasoline engine furnishes power for Hough TM "Payloader" equipped for switching railroad cars. Engine also runs the switcher's compressor.

Wisconsin Turnpike Found Not Feasible at Present

Wisconsin's Turnpike Commission announced in September that a cross-state Wisconsin toll highway from the Illinois line to the Minnesota border does not appear feasible at this time.

Commission Chairman W. A. Roberts said that although final reports had not been received from the consulting engineers and the commission was continuing to explore all possibilities, it was unlikely that a toll highway was presently feasible on the original routes surveyed. Explaining that the commission felt that bonds for the turnpike could not be sold, Roberts said traffic figures secured in a survey last summer did not indicate there would be sufficient traffic to pay off the cost of construction.

He emphasized that the conclusion did not rule out the possibility of Wisconsin turnpike construction in the future, but merely indicated that at present, on the routes surveyed, and at design standards considered, the project was not feasible.

Roberts said that several factors making the project unfeasible had been reported in preliminary traffic and earnings studies by the firm of Coverdale & Colpitts, New York, and in engineering studies by J. E. Greiner Co., Baltimore. The consultants said that because of Wisconsin's terrain, the cost of structures, such as bridges and of the road itself would be higher than in some other states. In addition, they said, the cost of purchasing farmland would be above that in some other states.

Considerations still under study were listed as including the following: Possibility that a project may be feasible on other routes or a combination of the routes studied. Possibility that traffic density may be affected by toll road and free road projects in adjoining states. Possibility that in the light of present discussions, the federal government may make added federal funds available for construction on the interstate highway

Continued on page 37

Two Allis Chalmers HD-20's with Gar Wood dozers spread fill hauled by scrapers. Three million yards of excavation-borrow go into an 11-mile Maine turnpike section.

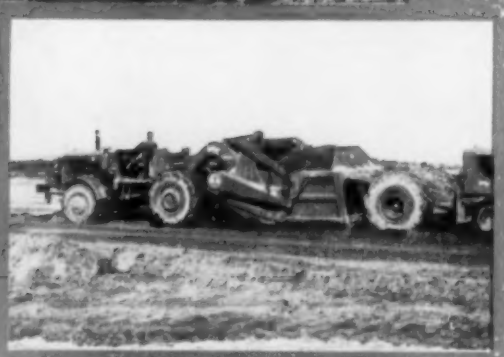
Faster Cycle Time and more Pay Yards!

"EUC" SCRAPERS Load Easier— Haul Faster

On short hauls as well as long ones—and in all types of material—"Euc" Scrapers move more pay yards per hour because they are easy loading and maintain fast cycle time. They have the power and traction needed for fast loading, high travel speed and for working on steep grades with full payload.

At McGuire Air Force Base in New Jersey, for example, six "Eucs" with 300 h.p. engines and Torqmatic

Drive and scraper tires are 29.50 x 25 for traction in sandy soil.



Torqmatic Drive utilizes maximum engine h.p. at all times.

Drives average 5 trips per hour on a 3000 ft. one way haul for Tecon Corp. of Dallas, Texas. On another section of this 750,000 yd. runway grading job, the fast cycle time of the Euclid 15.5 cu. yd. Scrapers enabled them to move 265 yds. each per hour on a 2000 ft. haul.

"Euc" Scrapers have struck capacities of 7, 12, 15.5 and 18 cu. yds—have your Euclid Distributor show you how they can do more work at lower cost per yard on your present or future work.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

CABLE ADDRESS, YUKLID CODE: BENTLEY

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

Braided Wire Rope Slings

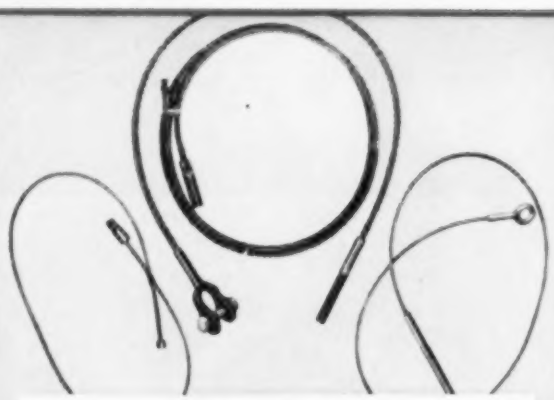
Materials handling—from unloading a car of pipe to handling a 200-ton generator—requires a wide variety of safe, economical, easy-to-handle slings. The sizes and types of Macwhyte Slings are practically unlimited—they are available in many standard designs or can be custom-made. Bulletin lists and illustrates many types and body styles in Round-Braided, Flat-Braided and Single-Part Slings. *Specify Bulletin 5308.*

The proper choice from this wide variety of wire rope products means —

LONGER and SAFER SERVICE

Wire Rope

Proper selection of wire rope is most important in getting safe, economical operation. To provide the right ropes for each of the many kinds of equipment, Macwhyte Company makes a thousand and one types and sizes. Included are PREformed Internally Lubricated Ropes, Galvanized Ropes, Stainless Steel, and Monel Metal Ropes. *Request Catalog G-16.*



Wire Rope Assemblies

Safe-Lock Wire Rope Assemblies provide a unit of wire rope with permanently attached fittings made to specified size, length, and strength needed. A wide selection of fittings and wire rope are made for use on small gasoline powered equipment; outboard motors; mining and excavating machines; agricultural implements; automotive, aircraft, marine, and laboratory equipment. *Ask for Catalog 5201.*

Recommendations for the correct wire rope product for your needs will be gladly furnished.

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Manufacturers of Internally Lubricated PRE-formed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Galvanized, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies.

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News . . .

Continued from page 34

system, or that other supplementary financing can be developed.

The Wisconsin Legislature last year appropriated $250,000 for a study of the feasibility of the toll road from the Illinois line in Walworth, Rock or Kenosha counties to the Minnesota line in St. Croix or Pierce counties. The Legislature a'so authorized the five-man turnpike commission, named by Governor Kohler, to proceed with construction if findings favored the contemplated project.

Although Wisconsin's constitution prohibits the state from going into debt for internal improvements, the State Supreme Court last year held that the Legislature had the power to set up a private corporation, in this case a turnpike corporation, to do work for public purposes. Corporation members, to have been appointed by the governor, would have issued revenue bonds for the road. They also would have controlled planning, building, and operation of the turnpike.

Original estimates indicated a turnpike roughly paralleling the present route of Highway 12 from Genoa City to Hudson, would cost at least $180 million. Original plans called for the pike to stretch 287 miles thorugh the state, cutting 49 miles off the present road distance between Genoa City and Hudson.

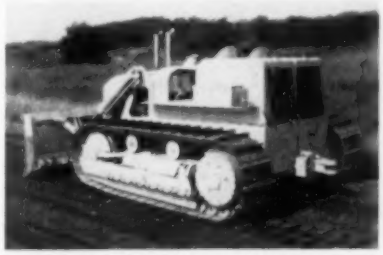
One possible route from Madison to Hudson and two possible routes from Madison to the Illinois border were studied. One southern route would have touched the border west of Genoa City and the other east of Genoa City.

Two of several projected Illinois toll roads will reach the Wisconsin border. One will reach the line near existing Highway 41 in Kenosha County, while the other will touch the line south of Beloit.

Euclid Gives Out Big News In Two-Day Preview

In a two-day preview and tour staged in the Detroit area on the 15th and 16th of September, the Euclid Division of General Motors gave out several important and one extraordinary news developments. The most noteworthy announcement made to newsmen and Euclid distributors from 20 nations in attendance proclaimed the firm's entry into the crawler tractor market with a new twin-engine machine of revolutionary design. In addition to this vital news, R. Q. Armington, Euclid General Manager, revealed three new experimental rubber-tired scraper models and plant news.

At the Milford, Michigan, proving ground of General Motors, the press representatives and distributors watched the 53,000 pound bare experimental Model TC-12 Twin Crawler tractor go through its paces. Armington said that

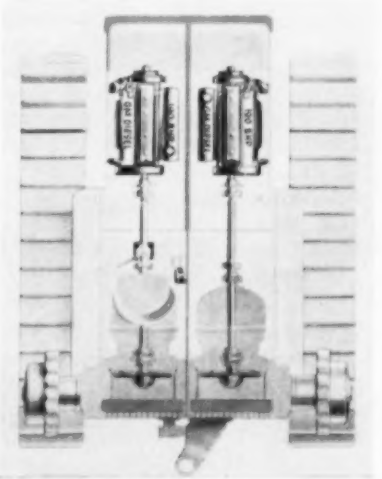


Euclid's new TC-12 twin-engined crawler tractor recently performed for newsmen.

development of the new machine places Euclid, long a leading off-highway truck, scraper and bottom dump supplier, in the track-type tractor field which has a yearly sales volume of $400 million. This volume according to Armington, represents more than half the total annual earth moving equipment market.

The Model TC-12 is the first of a projected complete line of crawler tractors for earth moving, open pit mining, logging, and industrial applications. The tractors displayed at Milford are the vanguard of 20 units to be quickly placed in trial field service for further testing. It is estimated that the machine will not be marketed until next year. The date will depend on field performance.

The TC-12 develops 380 horsepower with two 190 hp GM 6-71 Diesel engines. Each six-cylinder engine drives an Allison Torque Converter and Allison Torqmatic Transmission. Each drive train independently powers one track. Final drive gearing is the Euclid Planetary used in off-highway 50-ton dump trucks and 25-yd. bottom-dump wagons.



Diagrammatic sketch shows principal components arrangement in the TC-12.

Two separate drive and track assemblies are free to oscillate on a 7-in. transverse shaft. The Euclid Twin Crawler can be separated for shipment where weight and width restrictions are encountered. The two-section design also gives flexibility over uneven ground. The designers claim the tracks maintain good traction because each half of the tractor maintains better ground contact in rough terrain. A free movement of seven inches is limited by stops welded to each frame half. For applications where oscillation is not desirable, some of the tractors will be field tested with rigid mounting on the cross shaft.

Regarding the twin power development, the designers claim that by using two engines and two transmissions in larger tractors, and single engines with single transmission in smaller tractors, it is possible to have two basic models with similar power trains.

The company's statement on drawbar horsepower is as follows: "Proving ground tests indicate the Euclid TC-12 develops approximately twice the drawbar pull at 2½ miles per hour scraper loading speeds, compared to present 'big tractors.'"

The crawler tractor transmission, made by GM's Allison Division, provides three speed ranges forward and three in reverse. All shifting is accomplished under full power. There is no master clutch. The tractor can be shifted from one speed range to the other, without loss of motion, and can be shifted into reverse while still going in the forward direction. Top speed is 8 mph.

The Euclid tractor can be steered in several ways. It can be steered by increasing or decreasing the speed of one engine for gradual, even change in direction; it can be steered by putting one transmission in neutral and applying a track brake; or rapid, sharp turns under full power can be made by putting one transmission in forward and the other transmission in reverse.

The engines are mounted side-by-side, and drive through universal joints and drive shafts to the torque converter, which is located below and to the rear of the operator location. The converter, transmission, reduction gearing, and

Continued on page 38

News . . .

Continued from page 37

steering brake form one complete removable assembly. The reduction drive gears for each half of the tractor transmit power through an axle shaft to the sun pinion and the three-gear set of the Euclid planetary, located within the drive sprocket. The Euclid TC-12 can

The (7-yard struck) S-7 self loader marks Euclid's entry into small scraper line.

be almost completely dismantled without removal of the roller frames.

The front hood cover of each tractor half is hinge-mounted to permit ready access to the engine. Two radiators are located to the rear in order to make the operator's position free of dust and objectionable heat. The radiators are hinged to rotate out of the way for access to the transmissions.

Two SAE standard mountings are located at the rear of each tractor half for mounting of winch and cable control units. An experimental track tensioning device, based on hydraulic principles, is being tested on these machines.

The tractors displayed at Milford were equipped with the following Euclid-developed attachments: a push plate for scraper loading, a hydraulically controlled 13½-ft. bulldozer blade, a 17-ft. 3-in. angledozer blade, and a pull yoke for a Euclid loader. A full complement of additional attachments is being planned, including cable-controlled type bulldozers.

A design feature of the GM Diesel makes it especially suitable for the double harnessing. From the first, these engines have been designed with "symetrical" blocks. All openings in the block, from the crankshaft bearings to the topmost surface, are identical fore and aft. This allows the block to be reversed and external accessories to be fitted in a variety of groupings allowing setting the engines in "tight" compartments and still not hindering accessibility.

The S-18 developed by Euclid is an 18-yard machine powered by 300 hp GM Diesel.

Additional specifications include the following:

Length (Overall)	15 feet
Width (Overall)	11 feet 4 inches
Height (Excluding Stacks)	8 feet
Ground Pressure	8½ pounds psi bare
Std. Track Shoe Width	26 inches
Length of Tracks (Center Drive Sprocket to Center Front Idlers)	115⅝ inches
Ground Contact Area	6,000 square inches

The company also introduced three new scrapers which will be manufactured in limited quantities this year.

The S-7 marks Euclid's entry into the small scraper field. The 7-yd. (struck) machine is a self-propelled unit powered by a 138 hp GM Diesel.

The S-18, an 18-yd. overhung scraper, is powered by a 300 hp GM Diesel operating through an Allison Torqmatic Converter and Transmission.

The TS-18 is an overhung twin power scraper. The self-loading 18-yd.

Two 190 hp GM Diesels power experimental Euclid TS-18 (18-yard struck) scraper.

(struck) scraper is powered by two 190 hp GM Diesels, one pushing and one in the tractor.

At the preview, General Motors also announced that the 480,000-square-foot Electro-Motive Division plant in Cleveland was being transferred to the Euclid Division. Electro-Motive will continue to use other plants it owns. Tractors will be assembled at the new facility which more than doubles the 448,000-square-foot floor space Euclid had in three east-side Cleveland plants.

G-E Passes 100 Million Mark In Small Motors Production

An executive of the General Electric Co. today announced that the company has now produced more than 100 million fractional horsepower motors, a record set since G.E. first produced this type of motor in 1902.

H. A. MacKinnon, vice president and general manager of the company's Component Products Division, also predicted that the company will double that total by 1965, building a second 100 million motors in one-fifth the time required for the present record.

He defined fractional horsepower motors as electric motors of less than one horsepower rating, excluding clock and toy motors and certain types of miniature drives.

"Approximately 70% of motors of this type are used in the nation's homes," he said, "a clear indication of the rate at which the American standard of living has risen in the past 52 years and of the way in which it will continue to rise."

He pointed out that the average American home today has six of these motors in it, usually including those in refrigerators, washing machines, vacuum cleaners, furnaces, freezers, food mixers, and fans. The modern home under construction now has more than a dozen of these motors, while 10 years from now the "electrified home of tomorrow" will contain more than 25 fractional horsepower motors, he said.

Although a U.S. Patent was taken out on an electric motor in 1837, MacKinnon continued, it was not until more than half a century later that mass production methods began to make this 'magic servant' generally available.

Another Big Dredge Launched At Falls Bay, Canada

The second of the two largest dredges reportedly ever built was launched at Falls Bay, Atikokan, Ont., Canada recently. Christened the Joseph L. Block, she is sister dredge to the Clarence B. Randall previously launched at this location.

The hulls of both the Joseph L. Block and Clarence B. Randall are 176 ft. long by 50 ft. wide by 14 ft. deep. Weight, without machinery, is approximately 600 tons. Each is powered by a 10,000 hp motor driving a 36 in. pump with a capacity of 60,000 gal. of water and solids per minute. The engines weigh 45 tons apiece. Most of the dredge equipment will be delivered by rail, using about 800 railroad cars.

Built by Construction Aggregates Corp., Chicago, Ill., the dredges will be operated by that firm for Calend Ore Co., Ltd. The latter is a subsidiary of Inland Steel Co.

In what is believed to be the largest dredging operation ever undertaken, the Joseph L. Block and Clarence B. Randall will remove about 160 million cubic yards of silt overburden from the basin of Falls Bay. This is equivalent to an

excavation three miles long by one mile wide by a depth of 400 feet. This approaches the volume of the dredging operation for the Panama Canal.

Each dredge will be followed by two booster stations of equal pump capacity. The silt will be moved a distance of 61,000 feet through 36-in. and 42-in. pipelines. It is estimated that each dredge will move this material at a rate of 5,000 cubic yards per hour or three million per month. This is equivalent to an individual dredge capacity of 86,400,000 gals. per day.

New H. O. Penn Machinery Co. Plant Opened In October

A new plant of the H. O. Penn Machinery Co. was formally opened on the 2nd of October at Westbury, Long Island. A crowd of about 1,500 people inspected the new building and machinery exhibits as part of the Grand Opening ceremonies.

The building is of the most modern design for servicing construction equipment, and covers 40,000 square feet on a 4¼-acre plot.

This building is one of five operated by the H. O. Penn Machinery Co. the others are located in the Bronx, N. Y., Poughkeepsie, N. Y. (main office and warehouse), Tuxedo Park, N. Y., and Newington, Conn.

Using Refuse for Runway Solves City's Disposal Problem

The garbage disposal and runway extension problem are being solved by the city of Morgantown, W. Va., through the use of the sanitary landfill method of garbage disposal. When borrow pits adjacent to the airport were found to contain only 287,951 cubic yards of the 568,816 cubic yards of earth needed to extend the airport's North-South runway from 3,680 to 5,680 feet, officials decided to use refuse for the needed fill.

Collection trucks dump refuse in fill areas where an International TD-14A crawler tractor with an International Drott Bullclam spreads, compacts, and covers the refuse with an 18-in. layer of clean earth at the end of each day's operation. When one fill area has been built up seven feet, operations are started at another area, permitting the first area to be subjected to natural settling processes.

Recent tests have shown, however, that there is no appreciable settling after compaction. The area did not settle under a test load of 65.9 lbs. psi, the same

Continued on page 40

WELLMAN "Williams" MULTIPLE ROPE BUCKETS

Designed for digging bigger payloads

THE *double* main hinge design of these WELLMAN "Williams" buckets gives you many advantages, including: lower head room when boom or crane operations are cramped; stronger, more compact construction; and a really "long reach".

These tough, top-quality buckets are fast operating and give the operator perfect control at all times.

If it's a WELLMAN—it's built to dig and last while digging.

THE WELLMAN ENGINEERING CO.

CLEVELAND 4, OHIO

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Please send me bulletin on:

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City_____ State_____

Position_____ Company_____

International TD-14A crawler tractor with International Drott Bullclam spreads refuse in fill areas for runway extension as city of Morgantown solves disposal problem.

News . . .

Continued from page 39

load of the tire area on the main wheel of a Douglas DC-4 and has received official approval from the Civil Aeronautics Administration.

When fill work is completed in the North-South runway extension, Morgantown officials plan on using the same ramp method of sanitary landfill to extend the East-West runway at the airport from 3,100 to 4,400 feet.

Gar Wood Builds Large Bulldozers

The largest bulldozer blades ever manufactured are being produced by Gar Wood Industries, Wayne, Mich., according to an announcement today by E. B. Hill, vice president, sales.

The giant dozers have a moldboard measuring five feet high and 24 feet long. Each dozer is mounted on two Allis-Chalmers HD-20 crawler tractors, the largest tractors in regular production today, which have been welded together to operate as one tractor to supply the power needed to move the many tons of coal handled by the dozer.

Two of the big twin dozers have been purchased by companies of the American Gas and Electric Service Corporation and two by the Ohio Valley Electric Corporation. One of the AGE units is in use stockpiling coal at Appalachian Electric Power Company's Kanawha River Plant, Glasgow, W. Va.; the other will be put in use soon at the Ohio Power Company's Muskingum River Plant, Beverly, O.

The two OVEC units, designated for the Clifty Creek Plant, Madison, Ind., and the Kyger Creek Plant, Cheshire, O., both under construction, will be delivered soon. The big dozers are being built at Gar Wood's Mattoon, Ill., plant.

Tractor-Mounted Rock Ripper Helps Out on Road Job

The first fully tractor-mounted rock ripper used east of the Mississippi River has brought an estimated 25% saving in time, manpower, and money on a major Pittsburgh road job.

The problem was a fast and painless reconstruction of 1.9 miles of heavily traveled West Liberty Avenue (Route 19), which daily carries tens of thousands of commuters from the densely populated South Hills, through the Liberty Tunnels, and into downtown Pittsburgh. To cause a minimum of inconvenience to motorists, Allegheny Asphalt and Paving Co., Inc. used the system of half-and-half construction—one side being kept open to traffic while rebuilding the other side.

Since city law banned the use of a "headache" ball for breaking up the existing surface, for fear of damage to underground utilities, the Pittsburgh contractor needed an effective ripper which would maneuver in a small area and still retain maximum ruggedness. Allegheny, one of Pennsylvania's largest construction firms, purchased an HR-D8 extra heavy duty tractor-mounted rock ripper from Beckwith Machinery Co. The hydraulically-controlled ripper is manufactured by Greenville Steel Car Co., Greenville, Pa., under license from the American Tractor Equipment Corp. of Oakland, Calif. who has been producing this machine for some time on the West Coast.

Rear mounted on a Cat D8 tractor, for which it is made exclusively, the ATECO ripper not only backed into tight corners, pioneered cuts and ledges easily but also made possible a three-in-one operation.

With a dozer blade on the front and a ripper on the rear, the tractor performed shuttling "back and forth" maneuvers

New wide base earthmover tires developed by Goodyear for vehicles on large earthmoving projects are tested on tractor-trailer unit under actual operating conditions.

without needing to make full turns. This differs from the conventional pull-type ripper, which is a separate piece of equipment drawn by the tractor and having its own wheels—thus making full turns necessary.

Using only one of three available triple heat-treated gooseneck standards to assure maximum pressure at a single point, the tractor operator utilized the ripper to tear up the reinforced concrete topped by a layer of asphalt. For this particular job, the construction firm lowered the standards to their full 24-in. ripping depth, with 9-in. head frame clearance. Two-position pin spacing provides either 18-in. or 24-in. ripping depth.

The full 24 inches were used, according to Edward L. Lombar, general superintendent for Allegheny, because, although the depth of the old road ranged from 10 inches to 20 inches at most places, it was found that a better job could be done by getting the ripper's claw-like standard underneath the material, and pulling upward. On some parts of the road, where Belgian block layers intervened between concrete and asphalt, the ripper had to go through three layers.

Lombard reported that the operation was helped considerably by the fact that a pinned connection to the head frame of the ripper allows the standard to swivel 15° either way and thus permits effortless steering, with the standard following the tractor like a trailer.

Underground "quiver" of the curved standard helped to shatter the old road using less power than would be required with a pull-type ripper. The rock points, made of manganese-moly steel and designed with splitting edges, were used continually for 24-hour spans before they had to be replaced.

During ripping operations toeholds were obtained in the concrete, by use of the positive hydraulic down-pressure, another exclusive feature of the ripper. The down-pressure puts tractor weight on the points and the natural draft of the curved standards pulls points down deep.

Rear mounted on Cat D8, rock ripper is shown in action on Pittsburgh road job.

Baltimore Harbor Tunnel Cost Estimates Outlined

Maryland's State Roads Commission announced in mid-October that the Baltimore harbor tunnel will cost $130 million and will be ready for traffic on Dec. 1, 1957, six months earlier than had previously been planned for completion of the project.

The tunnel itself will be 1.7 miles in length, while approaches will be 13.5 miles long. It will run from Fairfield to Canton, will be the longest tunnel outside New York City, and also will be the only double-tube tunnel outside New York.

Formal establishment of $130 million as the project's cost was made by the J. E. Greiner Co., consulting engineer. Earlier estimates had run as high as $144 million.

ON YOUR BOOM MACHINE

SAUERMAN SCRAPER

Dragline capacity is increased up to 50% or more on many jobs when a Crescent Scraper is used. Cast like the regular bucket, it digs into and gathers the load with the ease of a plowshare, hauls at ground level and dumps automatically when lifted. The dragline never lifts the loaded bucket, hence it is capable of handling a scraper of larger capacity than the regular bucket or clamshell.

Above: A 1½-cu. yd. Sauerman Crescent used with a 1-cu. yd. dragline is lifted clear of the levee and returns to the borrow pit by gravity at 1500 fpm.

To dig from a river, deep pit or soft area beyond the reach of the boom, the Crescent is hung from a trolley that rides on a track cable. The cable extends from the boom tip to an anchorage. Digging, hauling and discharge proceed as in the casting operation. Following discharge, the scraper is lifted and gravity-returned to the excavation point by merely tightening the track cable.

Above: Boom machine has a boom length of 110 feet and uses a 4-cu. yd. Crescent scraper, replacing a 2½-cu. yd. dragline bucket.

Sauerman engineers will quote you on the largest size Crescent Scraper your dragline can handle. Just give us the make and model number of your machine.

Write for Field Report 219, Scrapers with Boom Machines and Catalog J, Scraper Buckets.

SAUERMAN BROS., Inc.

574 S. CLINTON ST., CHICAGO 7, ILL.

Equipment You Ought to Know About

Crushing Plant

Manufacturer: Iowa Manufacturing Co., Cedar Rapids, Ia.

Claims: A newly designed Single Pass portable crushing plant produces two sizes of low-cost gravel or rock on jobs where material does not have to be accurately graded. It is engineered for producing aggregate for city streets and alleys, county and township road maintenance, small state contracts, jobs in out-of-the-way locations, base or blanket course jobs, and other jobs where portability and fast set-up are important.

This new Cedarapids Single Pass Plant consists of a 6-ft. x 6-ft. loading hopper equipped with sloping bar grizzly with 7-in. openings; and 18-in. reciprocating plate feeder with adjustable feed stroke and feed gate; a 2-ft. x 6-ft. double deck Model "H" inclined vibrator screen; a 10-in. x 24-in. roller bearing jaw crusher; 24-in. x 25-ft. channel frame delivery conveyor; 14-in. x 20-ft. sand conveyor; and 36 hp gasoline engine; all mounted on rubber-tired full-trailer, goose-neck type with upper fifth wheel plate.

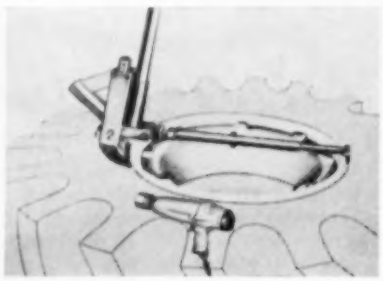
The entire plant weighs about 24,500 lbs. Oversize that will not pass through top deck of the screen drops into the jaw crusher and crushed material is discharged onto the delivery conveyor. Material that passes through the top deck falls directly onto delivery conveyor. Fines and sand passing through both decks can be shunted into the side sand delivery conveyor for elimination or onto the delivery conveyor with the main product material by means of a flop gate. This flop gate can be adjusted so a certain percentage of the sand can be blended with the crushed material and the remainder eliminated. This produces a high quality end product that packs and binds satisfactorily.

With the hopper and feeder mounted on the rear end of the plant and the dolly on the front, the Cedarapids Single Pass Plant can easily be backed up to the gravel bank into operating position. The simple design of the plant, with few moving parts, easy accessibility and inexpensive replacement parts are claimed by the manufacturer to result in extremely low operating and maintenance costs.

Bead Loosener

Manufacturer: Bishman Manufacturing Co., Osseo, Minn.

Claims: A new Bead Loosener for the giant tires used on "off-the-road"



equipment exerts up to 10,000 lbs. pressure on the bead to break it away from the tapered bead seat rims now being used on these wheels. The tool is simple to operate and loosens both beads with wheel off or outside bead with wheel on machine.

A long arm provides the leverage necessary to force the tapered steel fingers between tire bead and rim flange. A screw, operated by a ratchet wrench or impact wrench, then breaks the bead away from the rim.

Semi-Automatic Welder

Manufacturer: American Brake Shoe Shoe Co., 230 Park Ave., New York 17, N. Y.

Claims: A new, semi-automatic welding machine is now being field tested by the manufacturer's Amsco Division. Exhibited at the Second Annual Welding and Allied Industry Exposition in Buffalo last May, the welder created strong interest during the show. It is the first machine to combine the advantages of hand welding and automatic welding, while eliminating most disadvantages encountered with either method according to the manufacturer.

Amsco's new machine, called the MF Welder, feeds bare wire through a hand-held hopper containing magnetic flux. Flux clings to the wire as it leaves the hopper because of the magnetic field set up by welding current flowing through the wire. Thus the electrode wire, which is fed continuously from a coil, reaches the arc with a flux covering that contributes the advantages of a manual electrode coating. The operator can weld steadily for 15 minutes if desired; the delay of replacing electrodes and the waste of stub ends are eliminated.

Primarily a wire-feed and arc-control device, the new MF machine does not obsolete basic welding equipment. The MF is easily connected to any conventional a-c or d-c welding machine and operates over a current range of from 150 to 500 amps. It consists basically of a hook-up cable, a small chassis mounting an electrode wire reel, motor-driven feed rolls, and a flexible 14-ft. tube through which the electrode wire feeds to a hand-held hopper. The portable model is provided with wheels for easy movement, and is pear-shaped to help in pulling it around the job. Weighing only 34 pounds. it can be hung on a wall, where convenient, by means of a simple bracket. A slightly larger cabinet model is also available, caster mounted, and with ample storage space for various fluxes.

The magnetic flux provides arc shielding, deoxidation, arc stabilization, slag coverage of the molten bead, and in some instances, alloying ingredients.

The possible range of flux types is wide. Using only one type of electrode wire and varying the flux to suit, it is possible to deposit mild steel, build-up

steels, martensitic steel, martensitic irons, austenitic manganese steel, and other alloys. Only seconds are required to change from one type of flux to another, and no waste of flux or electrode is involved.

When an arc is struck the welding current closes a relay which connects a drive motor to the source of welding current, and the motor feeds wire to the arc. Motor voltage (and speed) depend on voltage across the arc. If the operator should pull away from his work, increased arc voltage speeds up the motor to feed wire faster. If he leans toward his work, decreased arc voltage slows down the motor to feed wire slower. This self-compensating feature holds the arc gap steady at any length set by the operator's control rheostat.

A push button allows the operator to feed wire without striking an arc. When set up for welding, several inches of bare wire project from the hopper nozzle. A pinch of flux can be placed where the weld will begin to make starting easier and to compensate for the small length of bare wire sticking out of the nozzle. Instantly after starting, wire feeding into the arc is coated with magnetic flux from the hopper.

Torque Converter-Engine Unit

Manufacturer: Bucyrus-Erie Co., South Milwaukee, Wis.

Claims: Torque converter-engine combinations are now available as optional equipment on certain models of Bucyrus-Erie excavators. Carefully selected to meet the average operating conditions that each size of excavator may be expected to encounter, the Bucyrus-Erie torque converter-engine unit is perfectly matched for maximum performance and efficiency.

The company's engineering and research department has specified use of high speed engines because they allow use of high speed torque converters—more economical in physical size, weight, efficiency, and cost. These torque converter-engine combinations provide maximum (stalling) torques from 200 to 225% of full load torques of straight friction drive for a given excavator. Actual multiplication in the converter is three times torque of high speed engines —twice that of corresponding friction drive engines.

This automatic balance of torques and speeds permits the engine to operate close to governed speed at all times, while machinery speeds vary to meet the torque demands made by the type of work and material being handled. The engine does not labor or stall in tough going but speeds up to provide more horsepower. When output speed is reduced by a heavy pull at the dipper teeth, the torque converter automatically matches engine speed to load requirements.

Resultant smooth, steady power over the entire digging or working cycle pays off in higher production with dragline, dragshovel, clamshell, and lifting crane front ends. In addition, the torque converter provides a cushioning effect to protect the machinery and engine from the shock loads encountered in excavator operation. This adds to equipment life, reduces engine wear.

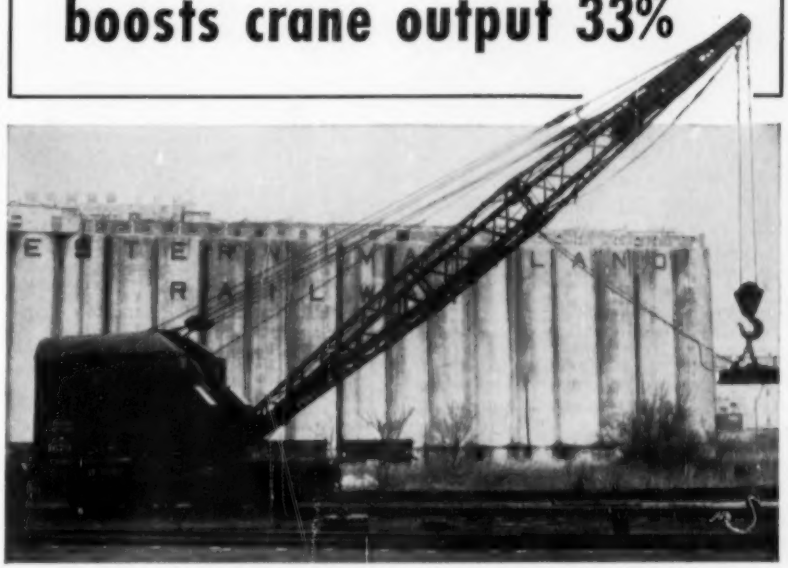
Tractor-Mounted Backhoe

Manufacturer: American Tractor Corp., Ft. Wayne, Ind.

Claims: Recently introduced on the

Continued on page 44

Easy pneumatic operation boosts crane output 33%



This one Westinghouse Controlair® Valve replaced a steam throttle valve and four manual clutch levers. It saves time and effort, and increases productivity of the crane.

AIR is now used to operate the throttle and clutches of this 50-ton locomotive crane. As a result, scrap metal, iron ore, and freight are handled faster at the Port Covington yard of Western Maryland Railway Company.

Westinghouse Air Brake Company supplied a complete pneumatic system for this crane, from control valves to air compressor. This new system replaced a jumble of awkward manual controls that slowed up operation and reduced the operator's efficiency. Now, with easy-operating Westinghouse Control, the operator can handle *one-third more* material a day.

We can improve *your* cranes, hoists, and other diesel-powered equipment. Write for full details.

Westinghouse Air Brake
COMPANY

INDUSTRIAL PRODUCTS DIVISION WILMERDING, PENNSYLVANIA

Manufacturers of air compressors, pneumatic cylinders, actuators, air control devices of all kinds, engineered pneumatic control systems and front end loaders.

Factory Branch: Emeryville, Calif. Distributors throughout the United States . . . See your Classified Directory. Distributed in Canada by Canadian Westinghouse Co., Ltd., Hamilton, Ontario.

New Equipment . . .

Continued from page 43

construction market is a new hydraulically operated Pippin Backhoe developed specifically for use on TerraTrac crawler tractors.

The new digging tool, known as the "TerraTrac-Pippin Special" was developed through the combined engineering efforts of the American Tractor Corp., Ft. Wayne, Ind., maker of TerraTracs, and the Pippin Construction Co., White River Junction, Vt., to gain maximum

working efficiency of both tools. Initial shipments are being made to TerraTrac distributors and dealers in all territories.

With an overall width of only five feet, and a height of less than five feet, the TerraTrac-Pippin Special can be operated in close quarters inaccessible to cranes and rubber-tired equipment. Yet its reach of 16 feet makes it possible to dig clean, vertical-walled trenches 10 feet below grade. It also has a 9-ft. dumping height for piling dirt well out of the way, or loading into high trucks. Bucket widths range from 12 to 40 inches.

The TerraTrac-Pippin Special is being rear-mounted on three TerraTrac models—the GT-32 and GT-34 (gasoline) and the DT-34 (Diesel). All three tractors can be equipped with a front-mounted TerraTrac loader or dozer blade. A special swivel seat makes it easy for the operator to face in either direction to operate front or rear attachments, or to move the tractor as needed.

The unit is said to be more stable because of its weight and traction, plus the ability to force the dozer blade or bucket into the ground and securely anchor the digger in a fixed position. This makes it possible to take bigger bites with each pass of the bucket, giving greater capacity than similar wheel-mounted ditchers.

½-Yd. Shovel

Manufacturer: Harnischfeger Corp., 4603 W. National Ave., Milwaukee 46, Wis.

Claims: Production of an entirely new ½ cubic yard crawler machine has been announced by the manufacturer. The Model 155's simple power box construction contains all driving machinery in a minimum of space. This feature, the heart of the machine, is built of inch-thick steel plate, all-welded into a rigid unit. Oil-tight, the power box forms the machine frame and supports all shafts, drums, engine, counterweight, and work attachments.

The Model 155 is an all-purpose machine. Fully convertible as a shovel, hoe, clamshell, dragline, crane and magnet, all front-end attachments are engineered for fast, simple change-over.

Model 155 is of all-welded construction for maximum strength without excess weight. True tractor-type crawlers provide excellent mobility with fine maneuvering qualities. Track tension is maintained by a fully enclosed compensator spring. Carbody and crawler frames are welded integrally with large-diameter turret and roller circle path, a construction providing maximum resistance to shock and strain.

The planetary boom hoist is triple safe with power lowering providing accurate control for "inching" boom loads. Power may be either gasoline or Diesel. Driving is through a 4-speed

transmission and universal joint to the worm drive pinion and gear in the power box. Large brakes and clutch areas are provided with cooling fins, and each drum has a permanent oil recession.

Backfill Tampers

Manufacturer: Davey Compressor Co., Kent, O.

Claims: Two new backfill tampers are designated models DT-32 and DT-42.

The DT-42 is in the medium weight class. The manufacturer advises that it is proving extremely popular for construction work. Its net weight is 35 lbs. with a length of 47¼ inches. Body maximum diameter is three inches and butt diameter is six inches.

The DT-42 was designed to meet the requirements of operators for an extra hard-hitting tool. It has more than double the work capacity of medium weight tampers and is reputed to substantially speed up tamping jobs without increasing labor cost. Weight is 45 lbs.; length, 47¼ inches; body maximum diameter, 3¾ inches and butt diameter, six inches.

Both tampers possess a high degree of parts interchangeability. This is said to greatly reduce maintenance and repair expense.

An outstanding Davey feature, according to the manufacturer, is a special locked type butt which eliminates the possibility of the butt coming off of the piston during operation. Locking device is also located on top of the butt, away from the pounding action.

Other features include chrome-plated cylinder bore, heavy-duty extension rod, wafer plate valve with differential porting, down exhaust deflector, alloy steel hollow butt, and replaceable throttle valve bushings.

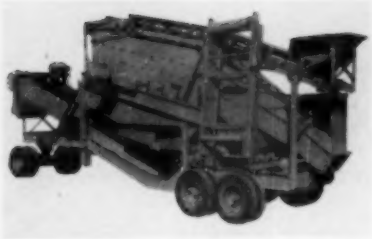
Both DT-32 and DT-42 tampers can be frame-mounted to permit the operation of three tools simultaneously with great savings in time and labor costs.

Portable Washing Plant

Manufacturer: Universal Engineering Corp., Cedar Rapids, Ia.

Claims: The Universal Washmaster is an all electric push button controlled portable washing plant designed to meet the need for washing aggregate. It delivers up to four sizes of finished material and has a capacity of 150-200 tons per hour.

The plant features a 4-ft. x 12-ft. three deck inclined gyrating screen equipped with spray bars and piping



combined with a 22-in. diameter x 25-ft., 0-in. long double fine-material screw washer. Delivery chutes permit taking material from any deck of the screen or mixing sizes to meet reqirements. The feed conveyor is a 24-in. channel frame type with basket hopper. A 36-in. horizontal side delivery conveyor which travels slowly permits hand rejection of unwanted material. It is extra wide to accept material from all three screen decks when desired. An 18-in. horizontal side delivery conveyor discharges material from the third screen deck. Both delivery conveyors are folding type for traveling.

All conveyors are equipped with permanently lubricated troughing and return rolls. The screw washer discharges fine material at the front via folding discharge chute. The complete plant is mounted on a pneumatic tired gooseneck truck.

The Universal Washmaster may be used as a complete washing plant or may be combined with a portable rock or gravel plant as a complete crushing and washing setup.

Battery Charger

Manufacturer: Universal Motor Co., 529 Universal Drive, Oshkosh, Wis.

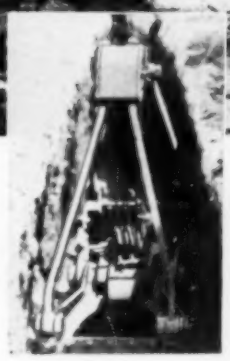
Claims: To answer the need of a small, dependable battery-charging set in the larger capacity ranges, the manufacturer now has a newly designed 1,000-watt model in production. Designated Model 21-MS, this new unit is rated at 1,000-1,200 watts, 32-40 volts, direct current for battery charging. It is of ample capacity for maintaining lighting batteries as well as engine-starting batteries.

Of small size for its 1,000-1,200 watt output, the battery charger measures only 18 3/16 inches in length and 15 5/8 inches in width. It is 14 1/8 inches high. Weight is 95 lbs. Its small size is illustrated by the 2.3 cubic foot installation space which it requires.

The Model 21-MS is powered by a

Continued on page 48

Top notch efficiency in
DEEP DOWN SPOT DIGGING...



Tangible, valuable features contribute to the exceptional trench excavating of

OWEN BUCKETS

Basic features include: *correctly designed shells* for easy penetration and discharge—*removable counterweights* to help force the shell into material and the block and tackle principle of multiplying closing power.

Others are *low headroom* that makes handling easy—*low center of gravity* that aids in placing the bucket when below the line of vision and *side cutters* which cut clearance for the bucket and aid in maintaining parallel trench walls.

"A mouthful at every bite"

BUCKETS AND GRAPPLES
Write for Catalog

THE OWEN BUCKET CO.
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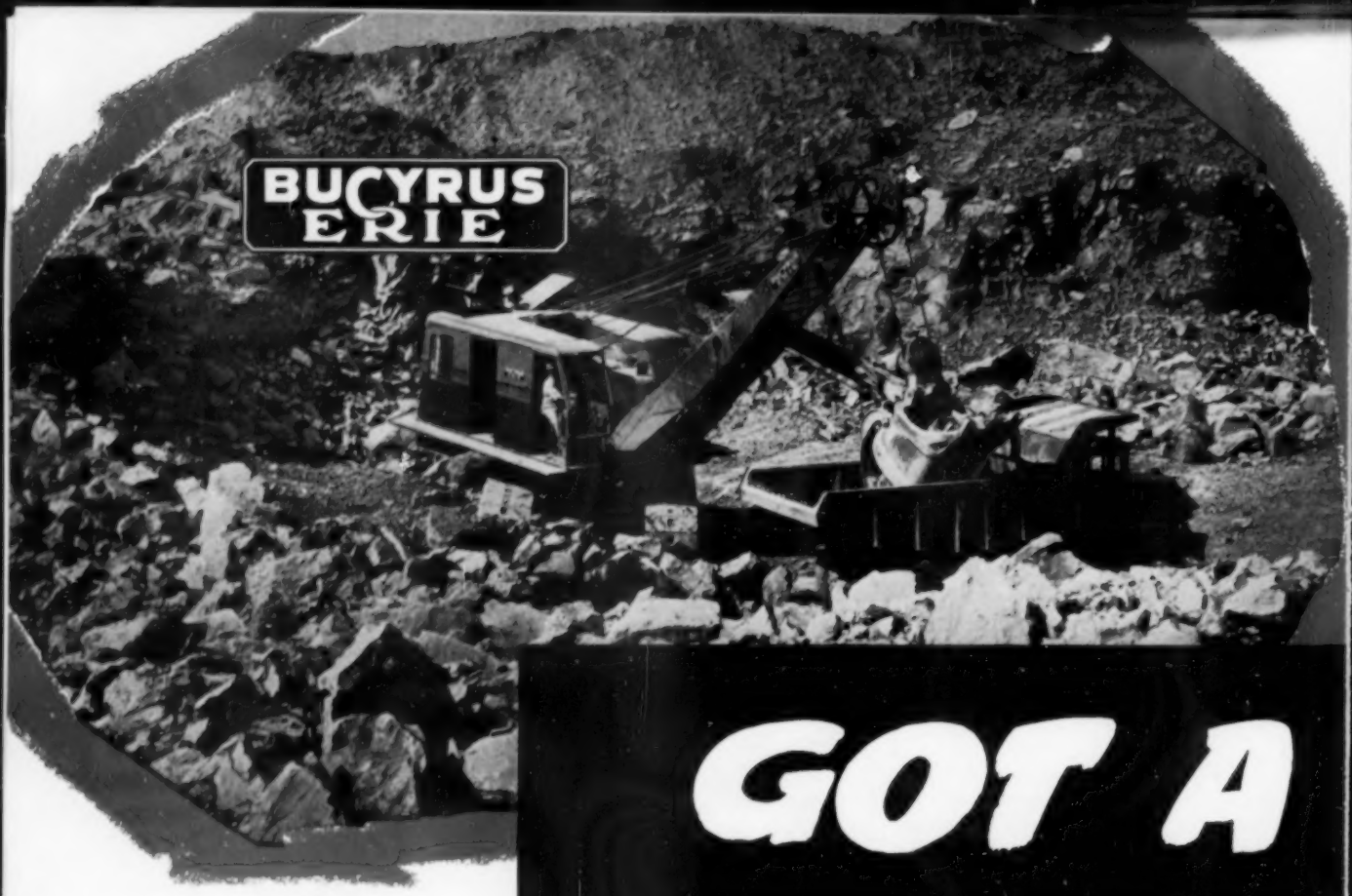


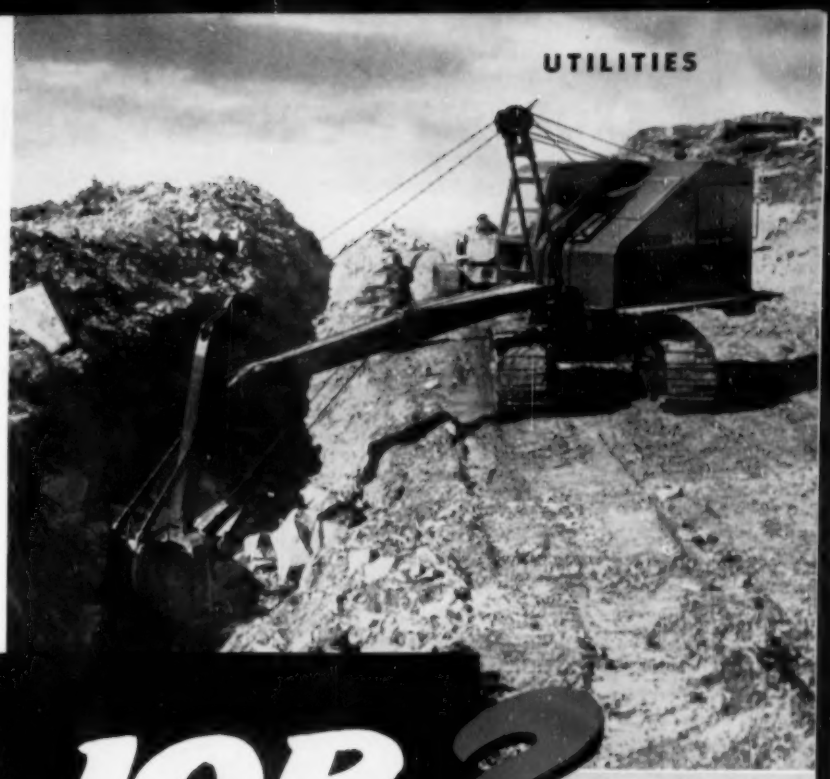
GOT A

...Bucyrus-Eries thrive on

1

YOU GET BIG OUTPUT

Bucyrus-Eries load fast, even in the toughest digging because they are built to deliver maximum power and speed. Each model in the ⅜- to 4-cu. yd. line features *individual design* for maximum efficiency in its particular work range. Front end, main machinery, power unit and mounting are all matched to dipper capacity. With all these units properly balanced, Bucyrus-Eries work harder, faster.



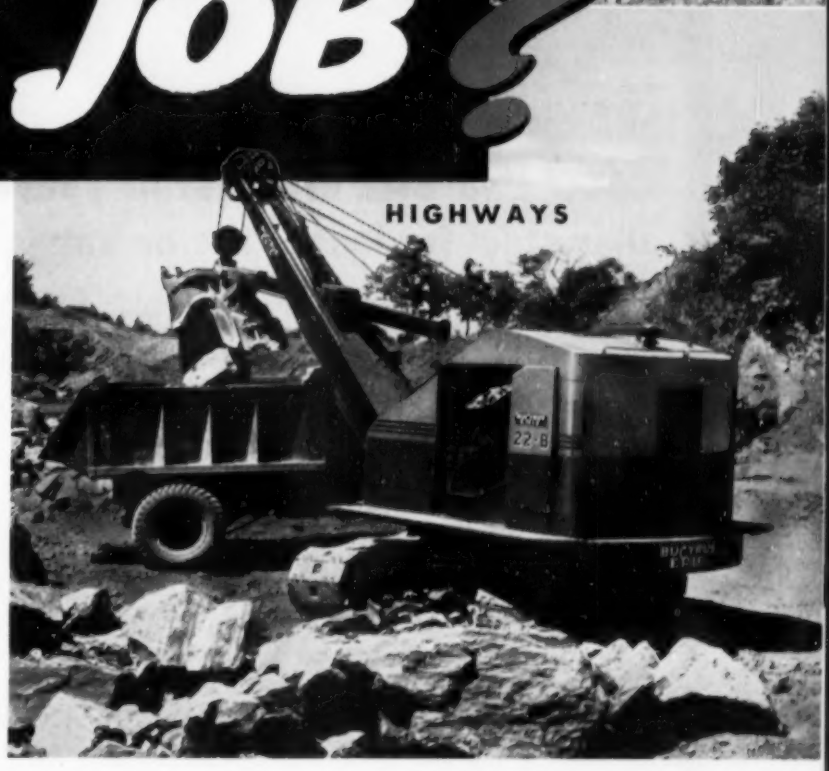
2

YOU GET LOW COSTS

Maintenance costs are low because work loads are properly distributed to prevent excessive punishment to any part. Fuel costs are low, too, because power units are "tailored" for excavator service to run at speeds most favorable to smooth operation.

ROCK JOB?

rock!



3

YOU GET FULL DEPENDABILITY

A Bucyrus-Erie stays on the job because high quality materials go into every pound of its weight. Machinery is arranged for easy handling of maintenance and lubrication. Adjustments are simple to make, stay put.

Buy the excavator that can handle your toughest job — buy Bucyrus-Erie! Capacities range from 3/8- to 4-cu. yd.; gasoline, diesel, or single-motor electric power available.

See your local Bucyrus-Erie distributor for complete information.

88E54C

BUCYRUS-ERIE COMPANY • South Milwaukee, Wis.

EXCESSIVE END BIT WEAR CAN BE STOPPED

One example of the 150 types of end bits manufactured by ESCO, this Shasta type end bit is used on dozers for punching out work on difficult terrain.

ESCO End Bits are cast of special alloy steel for longer life on any job!

Why tolerate excessive end bit wear and downtime? Economy minded operators of dozers, scrapers and graders are finding *ESCO* End Bits lick excessive wear and last longer on either rocky or abrasive operations.

ESCO End Bits are *cast* of special alloy steel, designed for maximum shock and wear resistance under *any* dozing conditions. And because *ESCO* End Bits are *cast, not* rolled or forged, metal thickness and wear resistance are located where they are needed most. Blade weight and shape are correct for maximum bite, and wear. For example, note the shape and distribution of metal on the *ESCO* Shasta type end bit illustrated above.

ESCO makes 150 types of end bits to fit dozers, scrapers, or graders of all major manufacturers and they cost no more than ordinary end bits. Keep *your* production higher with *ESCO* End Bits. For details, see your nearest *ESCO* dealer, or write direct.

ESCO

Offices and Warehouses: Honolulu, Hawaii; Houston, Texas; New York, New York; Los Angeles, San Francisco, California; Seattle, Spokane, Washington; Centralia, Pennsylvania; Eugene, Oregon; Salt Lake City, Utah. In Canada: Vancouver, British Columbia, and Toronto, Ontario.

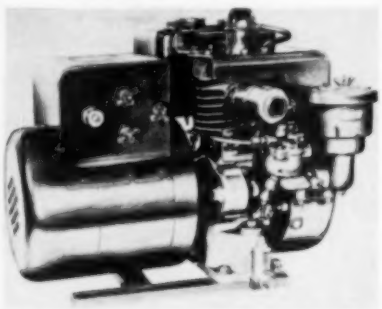
ELECTRIC STEEL FOUNDRY CO.

2143 N. W. 25th AVENUE, PORTLAND 10, OREGON 712 PORTER ST., DANVILLE, ILL.

New Equipment . . .

Continued from page 45

single-cylinder, air-cooled, 4-cycle gasoline engine direct coupled to the generator. It is fully equipped for safe service anywhere. It has push-button electric starter switch, reverse current relay, and battery ammeter for indicating



charging rate. These are contained in a convenient control box mounted above the generator. There is an adjustable rheostat for regulating the battery-charging current from 15 to 30 amperes.

Trencher

Manufacturer: Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif.

Claims: "Said to equal the pick and shovel work of 25 men," is the account given of the Everett Trencher, a tractor-mounted bracket-type trench-digger for Ford and Ferguson tractors.

Design improvements include a new built-in rock guard; single-wheel design said to give faster penetration; new "V-belt" power drive; and new easily accessible controls.

The Everett Trencher cuts up to 42 inches deep in a width of 12 to 18 inches. It is recommended for drainage and irrigation ditching; foundation work and water, gas, oil and power-line trenching.

Operating from the power-take-off of

the tractor, the unit is raised and lowered by a built-in hydraulic system. A V-belt safety slip feature is built into the drive of the trencher to stop the bucket line when obstructions such as pipe lines, heavy roots, large rocks, and foundations are encountered.

Trencher

Manufacturer: Parsons Co., Newton, Ia.

Claims: Hydraulic control of the digging wheel is an important feature on the new 150 wheel-type Trenchliner developed by the manufacturer. Digging wheel travels up and down a vertical mast. Hydraulic ram raises and lowers the wheel, holds close grade tolerance at any depth. Mast also is power controlled. A separate hydraulic ram tilts the mast to carry weight of

the wheel forward on the machine for proper balance when traveling, loading or unloading on trucks or trailers.

This new Trenchliner produces from 12 inches to 25 lineal feet of trench per minute. With a digging capacity of 5¼ feet deep and 16 to 26 inches wide, it meets requirements for drainage work, pipeline installations, irrigation projects, general utility, and construction work. The Model 150 is equipped with a range of 30 digging feeds, and three speeds on the heavy-duty digging wheel up to 11.25 rpm.

Other features incorporated in the new 150 Trenchliner include: a shiftable and reversible belt conveyor that discharges spoil to either side; dual purpose, friction type clutch on digging wheel drive that acts as an automatic safety to protect machinery against shock loads; solid or tine-back buckets with gumbo lips or exclusive "Tap-In" —type teeth; retractable bucket-cleaner; optional tile box and chute. Gasoline or Diesel engine is available. With three point suspension mounting, the weight of the 150 Trenchliner is well distributed over the full crawler mounted tractive system. Bearing pressure is six or eight pounds psi. depending on the use of 16 or 12-in. lug type treads.

Dump Trailer

Manufacturer: Galion Allsteel Body Co., Galion, O.

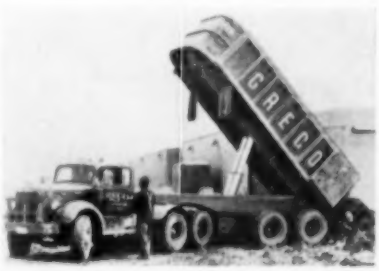
Claims: A new heavy duty dump trailer has been designed for use in off-the-road excavation work.

Known as Model 19TTE Excavator, the trailer unit is designed for use with tandem axle tractors. Body capacity is 20 cubic yards with payload rating of 60,000 lbs. The trailer, specially built to Galion specifications, has a high capacity reinforced frame and is equipped with heavy duty springs and axles. Equal load distribution, front and rear, provides maximum traction for off-the-road work.

The Excavator body is constructed of either eight gauge high resistance or 10 gauge high tensile steel. Body features include reinforced top rolls with deflector angles to prevent shovel damage, box type side bracing, and a laminated floor consisting of 1½ inches of oak under a ¼-in. wear plate.

According to the manufacturer, six-inch rear-to-front body taper, floor corners rounded to a six-inch radius, barn door type tail gate, and the 45° dumping angle assure clean discharge of sticky materials.

Lifting capacity of 75,000 lbs. is provided by the twin eight-inch telescopic



hoist cylinders. Maximum stability during dumping has been obtained by mounting the hoist cylinders close together.

4-Way Loader

Manufacturer: American Equipment Co., Omaha, Neb.

Claims: A new model of the American 4-Way Hydraulic loader is the first hydraulic loader on the market made specifically for use with the Fordson Major tractor.

The new model is practically the same as the Model 30 American 4-Way in every respect. The Model 30 permits work at a height of 27 feet; the new model at a height of 25 feet.

Attachments for use with the loader

include: a forage fork with optional grapple hook attachment. With the grapple hook, the fork can be used to move buildings, tanks, and other items weighing up to 3,000 lbs.; a dozer blade —6 feet 6 inches wide and made of heavy quarter inch steel; a V-snow plow —6 feet 8 inches wide, 2 feet 3½ inches high, made of 3/16 in. steel; a heavy duty, all-steel platform with guard-rail for use in place of a ladder or scaffold, and for hoisting materials.

The 4-Way, which takes its name from the fact it stacks, loads, lifts, and pushes—mounts or dismounts in only 15 minutes with just six bolts. The attachments can be changed in three minutes with a patented lock feature.

The 4-Way's leakproof boom cylinders, which eliminate cables that might slip or break, are made of cold drawn seamless steel. The back frame is only eight feet high for easy clearance and unobstructed vision. The hydraulic system has simplified controls—two levers that can be operated simultaneously with one hand. The pump is mounted directly on the power take-off and can be removed in one minute.

Pipeline Regulators

Manufacturer: Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

Claims: A new 8900 series of regulators has been announced by Air Reduction to supersede its 8600 series.

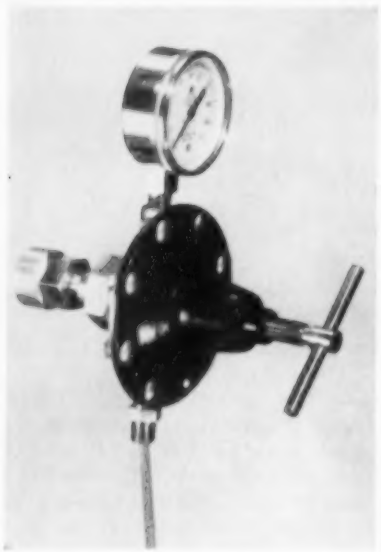
Continued on page 50

New Equipment . . .

Continued from page 49

This new series is designed for use with gasses supplied by pipeline systems using comparatively low pressures.

These new oxygen cutting and welding regulators afford greater flow capacities in most cases than the 8600 series



with improved regulation and lower static increment. Regardless of fluctuation in the line pressure, these regulators accurately maintain a steady gas pressure thereby eliminating the need for frequent regulator adjustment. They are of the inverse-type design and feature a novel seating arrangement which requires no nozzle.

Long service life, trouble-free operation, and ease of repair are characteristics of the 8900 series of regulators.

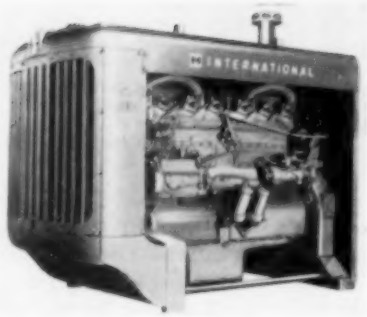
Diesel Power Unit

Manufacturer: International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Claims: The new UD-1091 Diesel power unit, largest in I-H's seven model Diesel power unit line, replaces the UD-24 unit. The engine produces 203 intermittent horsepower or 162.4 hp at 1400 rpm. As a power unit, the UD-1091 produces 190 intermittent horsepower or 152 continuous horsepower at 1400 rpm.

Net maximum torque of the UD-1091 is 793 lbs. at 1000 rpm as compared with 775 lbs. at 800 rpm for the UD-24.

The model number of this increased



power Diesel denotes its cubic inch piston displacement which is the same as the UD-24. Dimensions of the UD-1091 are the same as the UD-24.

The UD-1091 has all the thoroughly proven heavy duty features of the UD-24 including counterbalanced crankshaft, full flow lubricating oil filters, International twin plunger injection pump, Vernatherm bypass thermostats for quick warm-up and efficient operating temperatures, and the exclusive International gasoline conversion starting system.

The UD-1091 is interchangeable with the U-1091 natural gas burning engine. Both the UD-1091 and the U-1091 can be used with the new Alamo chain drive compound to make a dual engine assembly.

The entire unit is skid mounted and is available with or without radiators, with air or mechanical throttle and clutch controls, and various gear ratios for power take-off speeds above or below rated engine rpm.

Sealing Compound

Manufacturer: Crane Packing Co., Dept. DRS, 1800 Cuyler Ave., Chicago 13, Ill.

Claims: Plastic Lead Seal pipe thread and gasket sealing compound is now available in handy-to-use one pound brush top cans. This provides a permanent type applicator, always at hand for immediate use. The need for cleaning the applicator after each use is eliminated.

Other advantages of the new applicator are the brush which permits working the compound more thoroughly into the threads, the flat shank from which excess compound can be easily removed without waste, and the fact that it extends to the bottom of the can to enable full use of the contents.

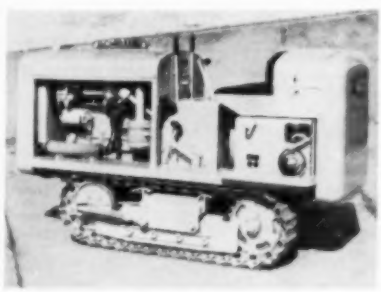
Plastic Lead Seal is an Underwriter's approved permanent, yet non-hardening sealing compound which allows easy disassembly of connections, even after years of service. It withstands pressures up to 6,000 psi, temperatures to 500° F., and is insoluble in water, steam, gas, refrigerants, and all petroleum products.

Crawler-Welder

Manufacturer: Schramm, Inc., West Chester, Pa.

Claims: To offset the difficulty of getting a welder to the place where it is needed, the manufacturer has mounted a 300 amp gasoline engine driven welder in a self-propelled crawler. Power from the engine is transmitted to the tracks through a chain, a differential, and final bull gear drive.

Steering is accomplished by brakes on the drive wheels. This gives the ability to turn the machine on its own center, a real advantage when getting into inaccessible places. The total overall width



is less than 32 inches. Four forward and one reverse speed are provided. Electric starting is standard equipment.

Rectifier-Type Welder

Manufacturer: General Electric Co., Schenectady 5, N. Y.

Claims: A new 300-amp, NEMA-rated, rectifier-type welder features quiet operation and low maintenance cost. The welder offers full time arc force control for holding very short arcs with deep penetration, according to company engineers.

A current range of 20 to 375 amperes is provided. The new welder utilizes the moving primary coil design, obtaining current adjustments by separation of primary and secondary coils. Stepless current control and highly accurate amperage settings are made possible by this design. Windings are aluminum and silicone insulation is used on all coils.

Offered as optional equipment, the fully-automatic arc force control provides an extra surge of current to blast away short circuiting metal drops

which would otherwise freeze a short arc and cause sticking. The arc force control will operate continuously with little danger of cutting out on critical applications, making the rectifier welder ideal for difficult work such as pipeline root passes, vertical welding, low hydrogen electrode jobs and others where a short arc and deep penetration are required, the engineers said.

Cooling for coils and rectifier stacks is provided by forced-draft ventilating fans. Operating on the updraft principle the fan can be reversed by spring loaded toggle switch to blow dust from

the stacks, prolonging their life.

A polarity reversing switch is standard equipment and access for maintenance is simplified due to the unit's removable side covers. Designated 6WR30B, the new welder is available for 220/440 or 550 volts operation.

Motor Grader

Manufacturer: J. D. Adams Manufacturing Co., Indianapolis, Ind.

Claims: A new Adams Motor Grader, known as the "330," is equipped with 75 hp International Diesel engine. It has 12-ft. blade and weighs 20,500 lbs. or more depending upon equipment.

The "330" is the latest of several new and improved models which the manufacturer has introduced recently which have included the "660" with 140 hp engine; the "550" with 115 hp engine, and the "440" with 85 hp engine.

All models feature a fully-constant-mesh transmission with helical gears mounted on roller bearings for quietness, long life, and easy shifting; eight

Continued on page 52

forward speeds up to 25 mph; four reverse speeds up to 13 mph; optional "creeper" gears from ¼ to 1¾ mph; rubber-mounted engines for floating power and a dual braking system wherein the service brake applies hydraulic pressure to a transmission brake as well as to the wheel brakes. Several of these features, which are intended to speed and increase production, improve operator efficiency and add to grader life, are exclusive with Adams, according to the manufacturer.

A wide variety of optional equipment is available including power-shifted moldboard, bulldozer, scarifier, and snow removal equipment. An elevating grader attachment is available for larger machines.

54-in. Crusher

Manufacturer: Nordberg Manufacturing Co., Milwaukee, Wis.

Claims: The new Gyradisc crusher, built to supplement the world renowned Symons Cone Crushers, provides a medium for still finer reduction than that heretofore obtainable in conventional reduction machines.

Using the Gruender method of reduction, the Gyradisc features a process of alternately impacting and releasing a thick mass of material, resulting in the production of large tonnages of fine particles. Relatively large particles combined in an intimately mixed feed, which is automatically distributed throughout the crushing chamber, prevents packing of the mass and assures high output. Mixing and feeding are accomplished and controlled by the compound action of gyration and rotation of the feed distributor. Thus, the principle of reduction is different from that employed in most gyratory-type crushers.

Of particular importance, too, is the crusher's positive pneumatic release mechanism which holds the bowl structure rigidly to the main frame. This mechanism responds quickly to any

Continued on page 52

Don't Let the Wrong BUCKET PICK YOUR POCKETS

When a bucket's too small, you lose pay load with every pass. When it's oversize, equipment wears out before its time. Either condition will pick your pockets systematically.

To be sure you have the right unit for the job, let Erie's field engineers survey your requirements. There's no charge. And you can be sure they'll come up with a helpful suggestion. They usually do.

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SAME PEOPLE • SAME PRODUCTS • JUST A NEW NAME

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New Equipment . . .

Continued from page 51

overload and provides automatic protection against damage from tramp iron or other non-crushable material. In case of power failure, the crusher cavity need not be cleaned out before starting. The air in the system can be quickly released, the crusher started and in a matter of minutes, normal operating air pressure is restored.

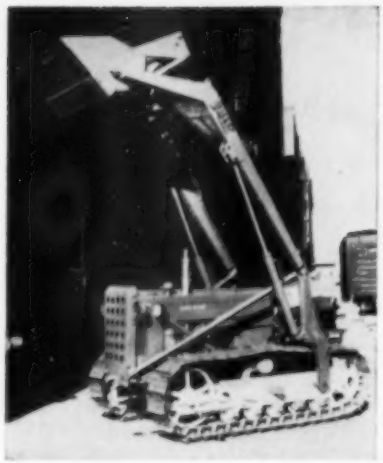
The Gyradisc is currently built only in the 54-in. size. Ideal feed is the open circuit product of a Symons Cone Crusher or equivalent product containing material minus one inch, ½ inch, or ⅜ inch, with or without fines. It may, however, operate in closed circuit with fines separated by pneumatic or mechanical methods.

Hydraulic Loader

Manufacturer: Valley Manufacturing Co., Valley, Neb.

Claims: A new combination industrial and farm hydraulic loader for John Deere Crawler tractors is designed to fit three, four, or five roller models.

The lift capacity is 2,400 lbs., using the standard built-in John Deere pump. The loader is designed with double acting hydraulic cylinders so that the operator has power when either raising or lowering. This feature give faster operation



than conventional loaders. Specially designed lifting arms of heavy gauge, plate steel in a stress resistant box shape give unusual strength. Non-breakable steel castings are placed at stress points to give extra reinforcement.

The loader is furnished with a 10.8 cubic foot utility bucket for sand, rock, coal, gravel, etc., or the unit can be equipped with a farm-type manure bucket which includes a dirt plate. Other attachments include straight or angle dozer blade, a scoop designed to handle light materials as well as snow, a boom, and made to order hydraulic tongs for logging operations.

The loader is painted in colors to match the John Deere tractor.

"Aw, Gee! Don't you have no strawberry pop?"

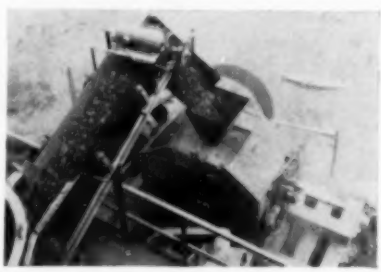
Rock Crusher

Manufacturer: Waldrip Engineering Co., 11810 Center St., Hollydale, Calif.

Claims: A new principle for crushing rock is embodied in the Latture Roto-Crusher now installed at one of the large Southern California aggregates plants.

The heart of this crusher is a pair of rotors, one concave and the other convex, each of which is corrugated axially, the corrugations being constantly spaced around the entire peripheral surface. These rotors move in opposite directions, are independently driven, and are accurately timed, so that the corrugations are in constant mesh, thus preventing slippage and virtually eliminating flat or elongated particles. The result of this construction is that rock is forced through the rotors at their peripheral speed, thus increasing the capacity of the crusher over that of crushers depending upon gravity flow.

Spacing between the rotors can be maintained as desired from ⅛-inch to six inches, through the use of a hydrau-



lic system which includes an accumulator containing both oil and gas; the oil to assure positive pressure between the rotors, the gas to allow sufficient compression to permit the passage of tramp iron.

The Latture Roto-Crusher is said to be producing ¼-in. minus material at the rate of 140 tons per hour, with an approximate reduction of 4 to 1.

End Dump Wagon

Manufacturer: C&D Manufacturing Co., Perkins, Calif.

Claims: Known as the Sierra Movall, a new cable-operated end dump rock and dirt wagon is now in production by the manufacturer. Interchangeable goosenecks make the wagon quickly adaptable for use with Caterpillar DW20 or DW21 tractors.

Capacity is 19 cu. yds. struck; 25 cu. yds. heaped. Maximum carrying capac-

ity, 31 tons. Principal features include an 11-ft. x 19-ft. target area for easier shovel loading; positive cable-controlled ejection; and controlled spreading for superior performance in dirt. Ability to dump from jackknifed position, and independently controlled air brakes which permit locking either tractor or wagon wheels, or both, add to dumping speed and safety.

Constructed of high tensile steel, welded in precision jibs, the new wagon offers strength and ruggedness, with minimum dead weight. Approximate shipping weight is 29,750 lbs., less tractor. Double bottom has two inches

of hardwood sandwiched between a ¾-in. top plate and ¼-in. bottom plate, with heavy ribbed reinforcing. Interior surfaces are protected by abrasion-resistant replaceable wear strips.

Two-Way Radio

Manufacturer: Radio Corporation of America, RCA Building, 30 Rockefeller Plaza, New York 20, N. Y.

Claims: New two-way mobile radio equipment which can easily be converted for operation on either 6- or 12-volt automobile batteries has been announced by RCA. It can be ordered for either voltage and for use in adjacent channels with either 20 or 40 kilocycle separation. Whichever is specified, the equipment can be readily converted at any time these requirements change.

The new RCA "Fleetfone" units were shown for the first time at the recent Dallas convention and show of the Petroleum Industry Electrical Association and the Petroleum Electrical Supply Association.

The flexibility of the new equipment with respect to both battery voltage and frequency channel separation protects purchasers from the risk of obsolescence, RCA pointed out, at a time when both factors may be uncertain or subject to change. The new "Fleetfone" models, available for either 30- or 60-watt output, include both station equipment and mobile transmitter-receivers. Like earlier "Fleetfone" units, they are designed for adjacent-channel operation and noise-free reception.

Communications Unit

Manufacturer: Bendix Radio, Division of Bendix Aviation Corp., Baltimore 4, Md.

Claims: The Bendix MRT-10 Trafficmaster—a complete self-contained, mobile communications unit—operates in the frequency range from 25 to 50 megacycles.

The unit consists of a separate transmitter, receiver, and power supply mounted in a single rugged, compact housing. It is easily portable and can be mounted in relatively inaccessible locations, according to the manufacturer.

Diaphragm Pump

Manufacturer: Essick Manufacturing Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.

Claims: Modern design, improved performance, and rugged construction have been combined in a new diaphragm pump introduced by both the Essick Manufacturing Co. and its Sterling Machinery Company Division.

The Model 4D diaphragm pump has 4-in. suction and 4-in. discharge fittings. The pump has been thoroughly tested and conforms to the standards established for 4-in. diaphragm pumps by the contractors bureau of The Associated General Contractors of America.

The reduction gears are totally enclosed to eliminate wear and corrosion of dirt and water and are said to add years to the normal life expectancy of this pump. The Model 4D is furnished on a rugged steel base, 16-in. steel wheels or 400:8 pneumatic tires.

Soil Testing Equipment

Manufacturer: Tinius Olsen Testing Machine Co., 3055 Easton Rd., Willow Grove, Pa.

Claims: A new line of soil testing equipment designed by Karol and Warner has been announced by the manufacturer. Included in this line are unconfined compression machines, triaxial testers, consolidation load frames, direct shear machines, consolidometers, compaction molds, and other related soil testing equipment.

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CROSBY CLIPS

On Equipment you Buy

When you see Crosby Clip's famous Red-U-Bolt on equipment using wire rope fasteners you know the equipment is *safe!* Made of drop-forged steel and hot dip galvanized, Crosby Clips offer a built-in margin of extra safety. On new equipment . . . on every job . . . insist on genuine Crosby Clips —*your symbol of safety!*

Crosby Products Division
American Hoist & Derrick Co.
St. Paul 1, Minnesota

HERE'S WHAT WE MEAN BY **that**

We've been telling you about the differences in design and construction that make Bucyrus-Erie Ward Leonard electric excavators the standard of comparison in the mining, quarry, and heavy-duty construction industries today. Now, here's the EXTRA MARGIN story summarized. Look over this tabulation. Compare the 6-cu. yd. 150-B with other excavators of equal dipper capacity. You'll see for yourself that the 150-B is far ahead of the field in features that pay off in profits.

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

extra margin in design

FEATURES	150-B	Shovel "A"	Shovel "B"
1. Ward Leonard control.	✓	✓	
2. DC reversible hoist motor.	✓	✓	
3. Light two-piece front end.	✓		
4. Lower part of boom rigidly fastened to A-frame.	✓		
5. Boom jacking impossible.	✓		
6. Widespread boom feet.	✓		
7. No sway braces on boom.	✓		
8. No dipper bail.	✓		
9. No crowd machinery on boom.	✓		
10. No bind in saddle block.	✓		
11. Crowd shocks absorbed by ropes.	✓		
12. Light single handle.	✓		
13. No handle spreader, no dipper pitch braces.	✓		
14. Handle free to rotate — no handle twist.	✓		
15. No racking on handle.	✓		
16. No torque in shipper shaft.	✓		
17. Single-part hoist.	✓		✓
18. Dipper twist taken by hoist ropes — dipper digs <u>in</u> rather than <u>away</u>.	✓		
19. Powerful propel (powered by hoist motor)	✓	✓	
20. Instantly-engaged propel.	✓		✓
21. Two gear reductions for hoist.	✓		✓

FEATURES	150-B	Shovel "A"	Shovel "B"
22. No operating sheaves at dipper.	✓		✓
23. Three gear reductions for swing.	✓		✓
24. Slipping clutch to protect crowd machinery.	✓	✓	
25. Convertible to dragline.	✓	✓	
26. Dragline is full-electric (no operating clutches).	✓		
27. Mill-type motors used.	✓	✓	
28. Center pintle has spherical washer for continuous bearing.	✓		
29. Propel brake on lesser-torque shaft for holding ability.	✓		✓
30. Propel brake protected, yet accessible.	✓		
31. Steering on both crawlers.	✓	✓	
32. Single crawler tumblers and idlers.	✓	✓	
33. Staggered lugs on treads.	✓		
34. Separate path for driving tumbler lugs to maintain proper mesh.	✓		
35. Large-diameter idler rollers.	✓		
36. Large-diameter shafts and bushings in idler rollers.	✓		
37. Grease-tight covers on idler-roller shafts.	✓		
38. Side frame attachments take both vertical and horizontal shear close to tumbler and roller axles.	✓		
39. Wide-base swing rails for effective weight distribution.	✓		
40. Swing rails wedged in place — no welds or bolts on rails.	✓		
41. Power electric wiring by trouble-free cables, not conduit.	✓		✓

This proof of superiority applies similarly to the 4½-cu. yd. 110-B and the 8-cu. yd. 190-B in their size ranges. Use this handy coupon to get complete information on the machine that fits your job requirements.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen:
Please send me full details on

4½-cu. yd. 110-B ☐ 6-cu. yd. 150-B ☐ 8-cu. yd. 190-B ☐

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

32L54C

Cherry Valley . . .

Continued from page 20

give all equipment any possible major overhaul which it might need at that time.

The company's excellent safety record has been due in the past to good planning and real pressure from the top down to effectively develop safety on the job.

Future Work Necessary

Cherry Valley Dam will have a definite place in the future integration of all the Yosemite installations of the Hetch Hetchy system. Future plans, for example, call for a one-mile tunnel to divert Eleanor Creek water into the Cherry Valley Reservoir. It so happens that Eleanor Reservoir has less storage capacity than its watershed has runoff, so this will divert that excess runoff into the large Cherry Valley storage.

Also at sometime in the future is the second tunnel for Cherry Valley, which will take water at the end of the present tunnel under the dam, and develop approximately a 2,000-ft. power head six miles away on the Tuolumne River. When that work is done, it will add between 60,000 and 80,000 kw, nearly doubling the present generated power capacity at Moccasin Creek and the Early Intake powerhouses.

According to the design engineers of the San Francisco Public Utilities Commission, the use of a submerged intake and pressure discharge combination at Cherry Valley Dam saved close to one million dollars. Another interesting saving in money was achieved by using a square cross section in the elbow between the circular intake and circular tunnel. Many hydraulic engineers would look askance at a hydraulic flow which switched from round to square and back to round again but here it presented no apparent problems.

Thinking far in advance, these designers also provided a 30-in. corrugated metal pipe to pass the minimum required flows under the dam. They also placed two 24 x 48-in. sluice gates in the submerged intake, so the reservoir can be drawn down when enough snow storage in the watershed makes it possible to make these inspections and guarantee a full reservoir that runoff season. Hydrology experts predict that the reservoir can be filled one year out of every five by the spring runoff.

Personnel

Working two eight hour shifts six days a week, Atkinson's field personnel is under the personal supervision of A. H. Steiner, project manager and vice-president of the company. He is assisted by Erroll Platt, assistant project manager; Ray N. Atkinson, general superintendent; Joe Canto, day superintendent; V. A. Chapman, night superintendent; Hank Quade, project engineer; Bert Lewis, master mechanic; and Carl Schmidt, powder superintendent.

For the Public Utilities Commission, City and County of San Francisco, Oral Moore is resident engineer. H. E. Lloyd is manager and chief engineer of the Hetch Hetchy Water Supply, and Wesley F. Getts is in charge of project designs. A Board of Consultants also was employed, consisting of Walter L. Huber, A. Kempkey, I. C. Steele, and Professor John K. Vennard of Stanford University, who did excellent work on model studies.

STANDS UP TO SEVERE USE

and even abuse

One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLER

famous for performance since 1888

Pipeline . . .

Continued from page 21

ditching machine to eliminate human and machine errors as far as possible. The lines contain everything from oil products and natural gas to oxygen, hydrogen, hot oil, nitrogen, telephone and power cables.

The trench, which averages 7½ feet deep, starts to cave in after six to seven hours, despite well-pointing, to present another hazard to the lowering-in crew.

Morrison tackled the toughest part of the project first, crossing a marsh with quicksand bottom in the northern part of Hammond. The 12-in. precoated pipe had to be tamped into the trench by using a special collar fitting on the pipe and the booms of two pipelaying crawlers to ram the pipe sections into place.

No completion date on the project is specified in the contract.

While these types of pipeline projects hold limited appeal to most companies, Morrison has been specializing in contracts in and around the Hammond-East Chicago area since 1928, headquartering in Hammond.

Minneapolis . . .

Continued from page 28

Johnson is A. E. Foote, and H. L. Mundy, Jr. is project engineer. Corps of Engineers personnel connected with the lower lock and dam are Emil Silverman, project engineer and C. W. Buending, resident engineer. Col. Otto J. Rohde, St. Paul district engineer, is in charge of the overall harbor development plan.

Although the time when the upper harbor will be ready remains indefinite, this much is certain—a great traffic awaits opening of the river above St. Anthony Falls. Coal and ore docks, grain elevators, warehouses, and factories will enjoy the great economic advantage of having railroads at their front door and a navigable waterway at the rear.

Requirements for Minneapolis Upper Harbor Development

Channel dredging	
Lower pool	320,000 cu. yds.
Intermediate pool	80,000 cu. yds.
Upper pool	1,000,000 cu. yds.
Lower lock and dam	
Excavation	104,000 cu. yds.
Concrete	84,000 cu. yds.
Reinforcing steel	1,250 tons
Structural steel	545 tons
Upper Lock	
Excavation	183,000 cu. yds.
Concrete	107,000 cu. yds.
Reinforcing steel	4,000 tons
Structural steel	550 tons
Guide fences and bridge alterations	
Structural steel	4,400 tons

New Trade Literature

Subject: **Motor Grader**

Content: Adams Motor Grader No. 550, powered by a 115 hp Diesel engine, is described in a new highly-illustrated catalog. The catalog covers the construction of the machine, its operating advantages, and shows the machine's application to a wide variety of work.

Where to get: J. D. Adams Manufacturing Co., Indianapolis, Ind.

Subject: **Earth Mover**

Content: The first of a new series of application bulletins shows contractors the wide variety of jobs the multi-purpose Gradall handles in various fields of construction work. This bulletin to general, industrial, and highway construction contractors utilizes the photograph-story technique with 31 different construction job pictures appearing in this first issue. In the field of general contracting, the new bulletin presents pictures with descriptive captions on such jobs as excavating, grading, and lifting. One photograph shows a crawler Gradall at work in very tight quarters digging a water line trench beneath an overpass. This is typical of Gradall work inside buildings and tunnels and under low wires. There are also photographs of Gradalls at work uncovering pipe lines, digging basements and placements for footers, as well as handling sloping, grading, and backfilling jobs. Gradall machines are also pictured in highway construction work such as ditching, road widening, road repair, and new highway construction.

Where to get: The Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, O.

Subject: **Crane-Shovel**

Content: A new 16-page illustrated catalog describes the many design and construction features of the recently announced Bay City 1½-yd. Crane-Shovel. The catalog is packed with machinery and parts pictures showing many of the modern advanced designs and improvements in this large-capacity, low-weight, low-price, convertible excavator. Request Catalog 70/700A.

Where to get: Bay City Shovels, Inc., Bay City, Mich.

Subject: **Heating Unit**

Content: A new, fact-filled eight page catalog on Heatflex electrical heating elements has just been released, containing descriptive material, applications, specifications, and engineering data. Heatflex is a new type of copper-clad electrical heating element, offering important advantages in ease of installation and precision heat control. Unit can be wrapped around almost anything, immersed in any solution non-corrosive to copper, or enclosed in any material, according to the information presented in the catalog. The new heating element consists of a seamless sheath of self-annealing copper in which is enclosed a pair of copper resistance wires, spaced and insulated by tightly packed magnesium oxide. Can be operated at any temperature from below freezing to 482°F., and can be furnished in any length.

Where to get: Continental Electric Equipment Co., Box 1055, Cincinnati 1, O.

Subject: **Concrete Mixer**

Content: A specification sheet for the Blue Brute 6-S Concrete Mixer is now being offered by Worthington Corp. The single sheet bulletin gives condensed specifications of the mixer, as well as standard and optional equipment available. Dimensions are graphically illustrated by a line drawing. Request Bulletin 1240-S4.

Where to get: Advertising and Sales Promotion Dept., Worthington Corp., Harrison, N. J.

Subject: **Soil Sampling Rigs**

Content: A new bulletin No. 28 describes the Acker line of portable powered soil sampling rigs known as Models RGT and RG. Both models feature a powerful hoisting winch for jetting and driving pipe or piles. A lever controlled positive displacement pump is also included on either model. Power plant can be either gasoline, kerosene, Diesel, electric or air motor or direct power take-off from a motor truck. A special feature of these port-

Continued on page 60

Heavy-Duty
FLOOD LAMPS
For Better Light • Longer Service • Lower Cost
Especially Designed for Efficient Service on
Shovels • Excavators • Drag-Lines • Roadbuilding Equipment
Locomotive Cranes • Tractors . . .
Metal Spinning Division
PHOENIX PRODUCTS CO.
4723 N. 27TH ST. • MILWAUKEE 16, WIS.
Write for Illustrated Bulletin.

NEW

in the No. 12

115 HORSEPOWER

A 15% INCREASE IN POWER

NO INCREASE IN PRICE

The new, improved Caterpillar No. 12 Motor Grader features greater power and from-the-seat starting.

NEW

in BOTH No. 12 and No. 112

One-lever from-the-seat starting

Accelerator-decelerator pedals

Improved hand throttle

Redesigned instrument panel in easy-to-read location

No increase in price

Now there's a new high in performance in CAT* Diesel No. 12 and No. 112 Motor Graders. In keeping with Caterpillar's policy of constant product improvement, both these rugged machines incorporate new features that increase their profit-making capacity. The new No. 12 packs more power, 115 HP—and has faster reverse speeds—low reverse, 4 m.p.h.; high reverse, 6.3 m.p.h. For durability, the capacity of the transmission and clutch has been increased to match the greater horsepower. Other improvements, standard in both the No. 12 and No. 112, are: convenient one-lever from-the-seat starting and the accelerator-decelerator pedals that permit changing speeds without changing throttle setting.

With these and other new features, you can figure on even *more* work at lower cost from the No. 12 and No. 112. Along with the No. 212, they are the only motor graders whose major components are built entirely by one manufacturer and serviced by one organization. Their performance record is unmatched—more than 99% ever built are still in use. Ask your nearby Caterpillar Dealer to show you how these machines can step up production and profits for you!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

NOT in the Contract

Mrs. Operator: (at head of stairs) "How you frightened me, Al!"

Operator: "How come?"

Mrs. Operator: "You found the keyhole so quick I was afraid it was somebody else."

A truck driver, hauling clay for a fill, backed his truck too far over the dump grade. The weight of the load being dumped lifted the front end of the truck several feet off the ground.

"Now, what are you going to do?" an associate asked.

The driver eased out of the cab to contemplate his plight. "Well," he said, "I think I'll grease it—I'll never get a better chance."

An inebriate staggered into a bar and placed a big live lobster in front of him.

After downing a martini, he said, "Shay, you make the best martinis in town and I'm going to give you Ethelbert, my pet lobster."

"Fine," says the bartender, "I'll take him home for dinner."

"No, no don't do that! He's had dinner. Take him to a show."

Club member (to Caddie): "Well, how do you like my game?"

Caddie: "I guess it's all right, but I still prefer golf."

Doctor (after examining patient): "I don't like the looks of your husband, Mrs. Brown."

Mrs. Brown: "Neither do I, doctor, but he's good to our children."

There once was a girl who went to the ball dressed in newspaper—that's all.

There was a fire that burned her attire —front page, sports section and all.

Conductor: "May I have your ticket please?"

Drunk: "Go buy yourself one like I did."

Once upon a time a man locked himself up in his room, and when he wanted to get out, he couldn't find the key. On the wall was a calendar, and in the room were only a bed and a piano. How did the man get something to eat? He ate the dates off the calendar, drank the water from the springs of the bed, and struck the piano until he got the right key, and walked out.

Little Percy was on his first day at school, and his doting mother was giving the teacher a long list of instructions.

"He's such a sensitive child," she gushed. "When he's naughty you mustn't punish him. Just slap the boy next to him. That will frighten Percy."

"Morning, Mandy Lee."

"Morning, Mister Tom."

"Your mama home?"

"Yeah, Mister Tom, she's home."

"Your papa home?"

"Yeah, Mister Tom, he's home."

"Well, Mandy Lee, just tell your folks howdy."

When the newlyweds got on the train the groom tipped the porter and whispered, "Don't tell anybody we were just married."

The next day the couple were very embarrased to find everyone staring at them, and finally confronted the porter.

"No suh," came the emphatic reply. "Every time they asked me if you was just married, I'd tell 'em, no indeed, you was just good friends."

The teacher was greatly surprised to see Tommy still outside the school door thirty minutes after school was dismissed.

"What's the trouble, Tommy?" she asked.

"I'm afraid to go home. We have a new baby at our house and I know my father will scold me. I always get blamed for everything."

"He had untold wealth and it ruined him."

"How's that?"

"His wealth was untold in his income tax return."

"No, no, Sweeney, we never force them! You might break the fuses."

New Literature . . .

Continued from page 57

able, relatively inexpensive rigs is that a rotary drill head can be added at any time in the future. With the drill head added, the unit, in addition to soil sampling, can be used for rock coring and foundation test boring.

Where to get: Acker Drill Co., 725 W. Lackawanna Ave., Scranton, Pa.

Subject: **Lubricants**

Content: A handy folder has been issued on Gredag lubricants. Specifically, the folder presents lubrication recommendations for average conditions of service on outdoor equipment.

Where to get: Gredag, Inc., Niagara Falls, N. Y.

Subject: **Safety Posters**

Content: A series of safety posters on the special hazards of construction work has been produced by the Construction Section of the National Safety Council. Featuring "Mel Onhead," the prize melon head who is always putting himself or his fellow workers on the accident casualty list, the posters cover the use of ladders, gasoline and shoring, and point up the hazards of daydreaming, lifting and walking under loads. The posters show the way a careless worker stumbles and fumbles from one accident to another. Drawn in a light vein, they are designed to give the worker a chuckle as they put across a point. The posters are printed in red and black on heavy card suitable for outdoor posting. They are available only in sets of 12 posters. Quantity prices available on request.

Where to get: National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Subject: **Calculating Costs**

Content: *Estimating Production and Construction Costs* by Louis Dallavia is offered as a reference text book for the construction industry for estimating the cost of work as close as possible. Dallavia has prepared the book for the architect, engineer, contractor, estimator, and student who may or may not have knowledge of estimating production and construction costs. According to the author, the book presents the general production and construction costs of any conventional project or building design and produces cost estimates that can be applied to a local job containing similar operations. The author also believes that the newly developed method of estimating construction costs never goes out of date by its application. A brief introduction explains the system, and then follows the exact application of the system to the major divisions of any building construction. The 160 tables cover these specific areas: 1—Earthwork production costs of power shovels, draglines, tractors, scrapers, wagons, shovels, rollers, dozers, trucking; 2—Concrete production costs of fabricating, erecting, stripping wood and metal forms, reinforcing, concrete placing and finishing; 3—Structural steel production costs of erection, riveting, welding; 4—Masonry production costs of laying brick, tile, blocks, stone; 5—Rough and finish carpentry costs of framing, finishing; and 6—Production and material costs of concrete, steel and masonry design. Also with the same tables the architect or engineer can calculate square foot design costs of concrete, steel and masonry for cost comparison of alternate design schemes. The 257-page book includes an appendix that provides much useful construction data. The book is priced at $15.

Where to get: The Dallavia Co., 2110 Elmen, Houston 19, Tex.

Subject: **Highway Engineering**

Content: *Highway Engineering* is a new book which critically analyzes highway practice in the light of its many unsolved problems. The book has been written by Laurence I. Hewes, Late Chief, Western Headquarters U. S. Bureau of Public Roads, and Clarkson H. Oglesby, Professor of Civil Engineering at Stanford University. The book stresses fundamentals; first, principles of each topic are clearly described and then practice and terminology are explained in terms of these principles. Particular diligence has been applied to making the book completely up-to-date with the result that the work summarizes effectively the latest developments in contemporary highway technology. The 628-page book is composed of 19 chapters and index. Of particular interest are sections on highway economy and finance, drainage, rights of way, and traffic engineering. Recent research findings are featured in chapters on soils, bases, and pavements. *Highway Engineering* is priced at $8.

Where to get: John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y.

Subject: **Cooling System**

Content: The importance of the cooling system of an internal combustion engine is emphasized in a new Service Bulletin just released by Cummins Engine Co., Inc. The Service Division of Cummins believes the cooling system to be just as important to an engine as the lubricating system, the fuel system or the air system. For as the new Service Bulletin, *Give The Cooling System A Chance*, points out —It pays to keep the cooling system in good condition because neglect will result in expensive repair bills or loss of an engine. This bulletin contains many practical suggestions on the best way to care for an engine's cooling system. The information is not only for Cummins Diesels, but may also be applied to all internal combustion engines.

Where to get: Cummins Engine Co., Inc., Columbus, O.

Subject: **Valves**

Content: A 16-page bulletin covers a complete line of standard 4-way hand, foot, power and solenoid operated valves. The bulletin also shows a new line of pilot valves. Dimensions and weights, application diagrams, circuit diagrams, parts list, and accessories are also included in the bulletin. Request Bulletin 1010.

Where to get: Ledeen Manufacturing Co., 1600 So. San Pedro St., Los Angeles 15, Calif.

Subject: **Mining**

Content: A new two-color booklet—*Modern Mining Methods*—presents a pictorial review of the Allis-Chalmers line of industrial equipment as applied by the mining industry. Action photos of crawler tractors, motor and pulltype scrapers, motor graders, motor wagons, and power units, highlight the 16-page booklet. They tell the story of Allis-Chalmers' developments in equipment geared to the mechanized operation and to other postwar techniques of the mining industry whether above or underground. They also illustrate how this modern equipment can increase output per

man-hour and how its versatility permits year-round use of many units for ultimate operating profits to the mine operator.

Where to get: Allis-Chalmers Co., Tractor Division, Milwaukee 1, Wis.

Subject: **Diaphragm Pump**

Content: Literature recently produced by Gorman-Rupp describes its new diaphragm pump. Listed in this company's literature as "Facts Almost Unbelievable" are: As much as 400% more pumping at 25 feet static lift—Diaphragm life increased 10 times—Less wear, everything runs smoothly—One man handling, only 130 lbs. job-to-job. Diaphragm pump is available as either gasoline engine driven or electric motor driven unit and is fully guaranteed.

Where to get: Gorman-Rupp Co., Mansfield, O.

Subject: **Truck Crane**

Content: A new bulletin on the P&H Model 105 TC Truck Crane was recently issued. The Model 105 TC is available only on its own precision-built carrier. It is rated at a full 10-ton crane capacity, and is easily converted to all other services, handling standard buckets at efficient boom length. Complete details on the P&H carrier are included, along with illustrations of the 105 TC at work on a variety of jobs. Request Bulletin TX-159.

Where to get: Harnischfeger Corp., 4610 W. National Ave., Milwaukee 46, Wis.

Subject: **Wire Rope**

Content: Of interest to those who handle, use, and deal in wire rope is a new Macwhyte bulletin number 5448 called *Ropeology*. In this new release are shown special boat slings, barge tow line, logging operation, cable assemblies, and slings.

Where to get: Macwhyte Co., Advertising Department, Kenosha, Wis.

Subject: **Electric Shovel**

Content: A new member of the P&H Electric Shovel family is introduced in an 8-page, two-color bulletin just off the press. This machine, identified as the P&H Model 1055-E is similar in size to the standard 3½-yd. P&H Model 1055, but is completely electric, driven by constant-speed AC motors throughout. Power transfer is through frictionless P&H Magnetorque units for all shovel motions—swing, hoist, crowd, and propel. Ask for Bulletin X-162.

Where to get: Harnischfeger Corp., Large Excavator Division, 4611 W. National Ave., Milwaukee 46, Wis.

Subject: **Compressed Air**

Content: The second edition of *Compressed Air Handbook* underlines the wide variety of industries in which compressed air power is used. This well-illustrated book has been put out by the Compressed Air and Gas Institute. Actually the book is authored by scores of specialists, engineers, and executives in the field who describe the use of compressed air power in operating pneumatic tools, rock drills, and other air-powered equipment, and explain the upkeep and testing of compressed air apparatus. Selection of the proper type of compressed-air tool and the efficient use of it are shown in the book. The book is divided into the following six sections: 1—Typical Applications of Compressed Air and Gas; 2—Air-Operated Portable Tools and Rock Drills; 3—The Compressed-Air System; 4—Positive-Displacement Compressors; 5—Dynamic-Type Blowers and Compressors; 6—Compressed-Air Engineering Data and Test Procedure. The book includes many helpful charts and tables. Price of *Compressed Air Handbook* is $8.00.

Where to get: McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.

Subject: **Dump Bodies**

Content: A new 4-page 2-color catalog describes Galion Allsteel Model 12N-5 bodies and Model 800T, 880, and 77353 hydraulic hoists. Illustrations in the folder include cut-away views, line drawings, and action photos. Exclusive features of Galion products are described, with emphasis on construction features and mechanical details. Complete specifications are shown.

Where to get: Galion Allsteel Body Co., Galion, O.

Dig In with the Best
When you start a job with an Omaha Dragline Bucket, you know you are digging in with the best. Omaha Buckets bite right in . . . taking a full load every time . . . and they dump clean. You can't beat an Omaha when there's a job to be done. Write for complete catalog giving specifications of four available types.
OMAHA
DRAGLINE BUCKETS
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

Notes from the Manufacturers

Aeroil Products Co., Inc., South Hackensack, N. J., has appointed Jack W. Weber as its new sales manager. Weber was formerly with Minnesota Mining & Manufacturing Co. and lived in Kansas City, Mo. He is in complete charge of national and export sales for Aeroil and will maintain his headquarters at its South Hackensack office.

American Tractor Corp., Ft. Wayne, Ind., has created a new executive position in its sales department. C. F. Rogers, former general sales manager for Lindsay Bros., Inc., Milwaukee equipment distributors will be given the same title at American Tractor. Rogers will work directly with company president, M. B. Rojtman, and vice-president D. A. Milligan, to set up a type of sales organization new to the construction and industrial fields. This new organization promises local service in each trading area and will give sales coverage for some 30 different markets. The organization setup includes a statewide distributor plus local dealers located in each important trading area.

Blaw-Knox Co., Pittsburgh, Pa., has announced that Joseph R. Schaeffer has been appointed chief engineer of its Construction Equipment Department. Schaeffer's experience includes three years with the Bureau of Mines, five years with Curtiss-Wright Corp., two years as a manufacturers' representative, and eight years with Blaw-Knox. He joined the Construction Equipment Department in 1953, becoming assistant chief engineer in January of this year. Also announced was the appointment of R. A. McCullough to assistant chief engineer of the Construction Equipment Department. McCullough joined Blaw-Knox in 1930 as a designer in the Research and Development Department and has been with the Construction Equipment Department since 1935.

Clark Equipment Co., Benton Harbor, Mich., has appointed Jackson Machinery Co. Inc., 1750 Shrewsbury Rd., New Orleans, La., to sell and service the Michigan line of excavator cranes and tractor shovels. The dealer will handle the Michigan products in the entire state of Louisiana . . . Clark also appointed Midwest Equipment Co., Fargo and Bismarck, N. D., to sell and service the Michigan line. The Fargo office, at 501 N. Fourth St., will handle the Michigan products in all counties in North Dakota east of and including the counties of Rolette, Pierce, Wells, Stutsman, Logan and McIntosh, and in Minnesota in the counties of Kittson, Marshall, Polk, Pennington, Red Lake, Norman, Clay, and Wilken. The Bismarck office, at 1400 Main St., will handle the shovels in North Dakota in all counties west of and including the counties of Bottineau, McHenry, Sheridan, Kidder and Emmons, and in Montana in the counties of Valley, Daniels, Sheridan, Roosevelt, and Richland. . . . Clark also appointed the newly-formed Long-Talbott Equipment Co., 820 Blossom St., Columbia, S.C., to sell and service the Michigan line of excavator cranes and tractor shovels, products of Clark's Construction Machinery Division. The dealer will handle the Michigan products in the entire state of South Carolina. Principals of the new firm are Ray F. Long, president, and John Talbott, vice president and treasurer.

Euclid Division of General Motors Corp., Cleveland, O., has appointed J. W. Bloomquist to the position of domestic sales manager. Bloomquist returns to the home office of Euclid in Cleveland after serving as manager of the Hibbing, Minn. factory branch since 1950. R. M. Brown, Euclid district sales representative in Ohio, Michigan, Kentucky, and Western Pennsylvania since 1950, has been appointed manager of the company's sales and service branch in Hibbing, Minn., succeeding Bloomquist. J. E. Ehlert has been appointed district sales representative for the territory formerly covered by Brown . . . Euclid also announced the appointment of Min-A-Con Equipment Co. as Arizona dealer. Min-A-Con, located at 1914 East Buchanan St. in Phoenix, will represent Euclid in the entire state except for the counties of Apache and Mohave. Leonard Beck is president of the new dealership.

Gar Wood Industries, Wayne, Mich., has appointed Don L. Herring district manager for tractor equipment sales. Herring will headquarter in Atlanta, Ga. His territory will include the states of Florida, Georgia, Alabama, North and South Carolina, and Tennessee. Previous to his appointment, Herring was on the sales staff of Square Deal Machinery and Supply Co., Orlando, Fla., where he worked for 2½ years.

Heil Co., Milwaukee, Wis., has announced two changes in its district sales representation. National accounts in the Detroit area, formerly served by a local office in that city, are now more adequately handled by Milwaukee-based personnel who are closely associated with engineering and manufacturing operations. With modern, time-saving transportation available between Milwaukee and Detroit, close contact can be maintained. Distributor accounts in Michigan are being covered by sales personnel from the Chicago and Cleveland district offices. Roland Karste, former Detroit district sales manager, has been appointed general manager of Heil-Chicago, Inc., McCook, Ill., distributors of Heil truck bodies, hydraulic hoists, and milk and petroleum transport tanks in the Chicago area. Another change in Heil sales representation involves the Washington, D.C., area. Government contact work which had been handled by the Heil Washington District Office is now serviced by the Washington Engineering Co. Distributor accounts in Virginia and Maryland are being served by sales representatives of the Heil eastern district sales office in Union, N. J.

Le Roi Co., Milwaukee, Wis., has appointed Jack E. Heuser, to vice president in charge of sales. Heuser will be responsible for the organization and management of a newly created sales division which will sell and serv-

Continued on page 64

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number. If blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Lima 1201 powered by Cummins diesel engine model LI-600 serial No. 104891 with approximately 500 hours operation, 130' boom, 15' jib with boom mast; long crawlers with 44" treads. 5KW Kohler light plant, one 3 yd. medium duty Erie dragline bucket, one 4 yd. Hendrix dragline bucket; good operating condition; cash or rental purchase $48,000 f.o.b. Tullahoma, Tenn. Direct inquiries to Inland Construction Company, P. O. Box 507, Rosedale, Miss.

Bucyrus-Monighan 5-W dragline; serial #672; 120' boom; purchased new, one owner, carefully taken care of, excellent mechanical condition, can be inspected at our operation Colliers, W. Va. West Virginia-Pittsburgh Coal Company, Box 640 Weirton, W. Va. Phone: Weirton 75.

Lima "1201" dragline, serial #4116; 80' boom, 3 cu. yd. Page RH dragline bucket; powered by Cummins L-600 diesel engine, and equipped with Kohler Light Plant.

Marion model 40-A dragline, serial #8256; 89' boom, 3 cu. yd. Page bucket. Caterpillar model D-17000 diesel engine and Kohler Light Plant.

Manitowoc model "3000-A" high lift shovel, serial #3197; 35' boom, 27' dipper sticks, 1¾ cu. yd. dipper; powered by Cummins model NHIS-600 diesel engine and equipped with Kohler Light Plant.

Lima model "802" high lift shovel, serial #3145; 32' boom, 27' dipper sticks, 1¾ cu. yd. dipper; powered by Caterpillar model D-17000 diesel engine. The above machines are in good condition and reasonably priced. Contact Allison Engineering Co., Foxburg, Pennsylvania.

3-W electric walking dragline serial #443, 80' boom, 3 cu. yd. bucket, single motor 150 H.P., 3 phase, 60 cycle, 4000 volts; some spare parts included; reasonable price.

1½-T electric walking dragline serial #414, 60' boom, 2½ cu. yd. bucket, single motor 100 H.P., 3 phase, 60 cycle, 4000 volts. These machines located in Florida and offered at reasonable prices. Box 3590

P & H model 1400 electric shovel, equipped with 3½ cubic yard dipper, 48' boom, 34' dipper sticks, for 3 phase, 60 cycle, 4000 volt current; available immediately; excellent condition, reasonable price; located in Western Pennsylvania. Box 3576

Bucyrus-Erie model 120-B electric shovel, excellent mechanical condition, new in 1949, located in Minnesota, priced to sell. Box 3566

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Lima 1201 combination shovel and dragline. Cummins diesel engine, 80' dragline boom. Location middle west; priced to sell. Box 3548

Bucyrus-Erie 22-B combination dragline and clamshell, completely overhauled, 40' boom, GMC diesel engine, new in 1947, machine serial No. 54879, price: $10,500. Fuchs-Clayton Machinery Co., Omaha, Neb.

Model 44-B combination shovel-dragline, serial No. 33259; Buda 6 DH1611 motor, serial No. 30433; Nova starting motor; Kohler light plant, 60' dragline boom with bucket. F & S Contracting Company, 1300 Chicago Street, Butte, Montana.

Lorain model 95 dragline with 75' boom 2¼ yd. bucket, D-17000 Caterpillar diesel engine serial number 9309, fully enclosed steel cab recently installed.

Ransome 56S concrete mixer, complete with water batcher and batch meter; no motor.

Six concrete buckets, Blaw-Knox, 2 cu. yd. capacity, roll bottom. J. Ray McDermott & Co., Inc., Harvey, La.

S-461 (B) Lorain mdl. TL-20 ½ cu. yd. capacity backhoe on crawlers, fully enclosed cab, angle iron grousers with extra counter-weights, powered by Caterpillar mdl. 315 diesel engine. Sale Price F.O.B. Evansville, Ind. $5,500

RS-496 (A) Bucyrus-Erie mdl. 15-B ½ cu. yd. dragline on crawlers with extra counter-weights, 35' boom, fair leads, powered by International UD-350 diesel engine. Sale Price F.O.B. Evansville, Ind. $15,390

S-004 (B) Lorain mdl. 82, 2 cu. yd. dragline on crawlers, fully enclosed cab, electric starting with 2 yd. Esco rock bucket; powered by Waukesha mdl. 6WAKH diesel engine. Sale Price F.O.B. Louisville, Ky. $21,500

S-444 (C) P&H mdl. 255-A ¾ cu. yd. shovel on crawlers, fully enclosed cab, electric starting, powered by Waukesha mdl. MZA gasoline engine. Sale Price F.O.B. Evansville, Ind. $6,950

S-2504 (C) Unit mdl. 1020, ¾ cu. yd. backhoe, shovel, clamshell combination on crawlers, one man cab, electric starting; powered by GMC mdl. 3-71 diesel engine. Sale Price F.O.B. Louisville, Ky. $8,000

S-488 (B) Buckeye mdl. 70, ¾ cu. yd. dragline on crawlers, enclosed cab, with 35' boom, fair leads and Hendrix mdl. LS ¾ cu. yd. drag bucket; powered by Chrysler mdl. 91 gasoline engine. Sale Price F.O.B. Evansville, Ind. $4,500

RS-2338 (B) Lima mdl. 34 Paymaster ¾ cu. yd. drag shovel on crawlers, enclosed cab, electric starting. Powered by GMC mdl. 4-71 diesel engine. Sale Price F. O. B. Louisville, Ky. $8,000

RS-2619 (C) Bucyrus-Erie mdl. 10-B, ⅜ cu. yd. drag shovel, shovel and lifting crane combination on crawlers, electric starting, closed cab; powered by Buda mdl. 6B-230 6 cylinder gasoline engine. Sale Price F.O.B. Louisville, Ky. $6,000

RS-2644 (C) Insley mdl. K-12, ¾ cu. yd. crane on crawlers with 30' boom; powered by Buda gasoline engine. Sale Price F.O.B. Evansville, Ind. $4,500

RS-2645 (B) "Quick-Way" mdl. "S" drag shovel ⅜ cu. yd. on White half track with ⅛ cu. yd. bucket; powered by International U-164 gasoline engine, electric starting; half track powered by gasoline engine. Sale Price F.O.B. Louisville, Ky. $7,000

S-005 (B) Lima mdl. 101, 1½ cu. yd. dragline on crawlers with 70' cross welded boom and 1½ cu. yd. bucket and fairleads; powered by Waukesha gasoline engine. Sale Price F.O.B. Madison, Ind. $6,500

RSP-259 (A) Bucyrus-Erie mdl. 22-B, ¾ cu. yd. drag shovel, crawler mounted, fully enclosed cab, powered by International UD-16 diesel engine, electric starting. Sale Price F.O.B. Paducah, Ky. $18,500

RS-2537 (A) Two Bucyrus-Erie mdl. 15-B, ½ cu. yd. clamshell on crawlers, fully enclosed cab with 30' boom and counterweights; powered by International UD-350 diesel engine, with electric starting. Like new machines. Sale Price F.O.B. Louisville, Ky. each $14,900

S-491 (B) Shovel front complete with ½ cu. yd. dipper for Lorain TL-20. Sale Price F.O.B. Evansville, Ind. $1,200

S-2311 (B) Shovel front attachment for mdl. "E" "Quick-Way", complete w/4/10 cu. yd. dipper; has been used very little. Sale Price F.O.B. Louisville, Ky. $1,000 Box 3580

Northwest 80-D, 2½ cu. yd. shovel, with Murphy diesel engine; 1947 machine in good working condition; "as is, where is," location: Bronx. $13,000. H. O. Penn Machinery Co., Inc., 140th St. & East River, New York 54, New York, Phone: CYpress 2-4800.

Bucyrus-Erie 54-B combination shovel and backhoe; serial number 72828, $39,500 F.O.B. cars, Umatilla, Oregon. Guy F. Atkinson Co., 10 West Orange Avenue, South San Francisco, California.

For sale or will rent at A.G.C. rental rates Bucyrus-Erie 54-B dragline, long and wide caterpillars, maximum 80' boom, Buda 1879 diesel engine, serial #50753; machine in excellent condition. Carveth Construction Co., Lincoln, Nebraska.

Lorain model 80 1¼ yd. combination shovel, clamshell dragline machine, 50' boom, w/Cat D13000 engine; 1950 machine; excellent condition; inquire today. H. O. Penn Machinery Co., Inc., 140th Street & East River, New York 54, New York, Phone: CYpress 2-4800.

Lorain model 80, 1¼ cu. yd. shovel, including 50' clamshell boom, w/Cat D13000 diesel; w/elec. starting on gas engine; recently rebushed throughout; in good working condition; serial #1819J; location: Queens, N.Y. $19,500. H. O. Penn Machinery Co., Inc., 140th St. & East River, New York 54, New York, Phone: CYpress 2-4800.

MISCELLANEOUS EQUIPMENT

P&H crane, model 6558, w/counterweights, 70' boom, 25' jib, boom stops, high gantry; fairleads and tagline; available now.

D-6 Cat. #8030, w/hyster; model 24; cable control unit, serial 51356, angle dozer, serial A18259SK.G.A. completely overhauled; available now.

TD-6 International crawler tractor 30" wide tread w/Bucyrus-Erie 6WG 2 yd. bull grader w/front pump, serial no. 29853 w/one set rubber pads for tracks; available December 15, 1954 approximately.

TD-9 International diesel crawler tractor w/Bucyrus-Erie, model 9DSNS dozer shovel w/1 cu. yd. 75" wide bucket w/teeth; available December 15, 1954 approximately.

Koehring model 605 diesel crawler crane, serial C-5725 w/80' boom, 10' jib tagline and accessories; available December 15, 1954 approximately.

Compressor Worthington 500 CFM, serial 104473; available December 15, 1954 approximately. All above equipment priced right and in good shape, to be sold as is, where is, by Donovan-Kehoe-Foley, P. O. Box 687, Paducah, Kentucky, Phone: 56311, Ext. 8510.

Bucyrus-Erie 38-B dragline, Cat. D13000, 70 ft. boom, 1½ cu. yd.; Bucyrus-Erie bucket, swamp cats, extra counterweights, serial no. 93766; new 1952, very low hours; independent propel; location: Michigan.

Lippmann portable R.B. jaw crusher, 24x36 Grizzly-King, mounted on 12 pneumatic tires, 4 ft. x 8 ft. two deck scalping screen mounted on unit; new June 1952; excellent condition; delivery conveyor; location: Michigan.

Lippmann portable R.B. roll crusher, 42"x24" mounted on tandem axle trailer, three deck 4'x 12' screen, sand rejector, delivery conveyor; new June 1952; new roll shells 1954; closed circuit plant; diesel power; excellent condition; location: Michigan. Subject to prior disposition. Mid-America Engineering Corporation, 4842 Dempster St., Skokie, Illinois.

10-B—30' boom $200
10-B—Fairlead $110
10-B—Rud-o-matic Tagline Reel $125
Erie ¾ yard Clamshell Bucket $650
Bucyrus-Erie ¾ yd. Drag Bucket $175
#630 Rud-o-matic Tagline reel $150
H-2 Hydrocane ¾ yd. Clam Bucket $400
Three Tine Grapple for H-3 Hydrocane ... $350
The above items can be inspected at J. P. Waite, Inc., 2304 West Pierce Street, Milwaukee, Wisconsin.

Six cubic yard dipper and Tri-Ten handle for Bucyrus-Erie 150-B Shovel; slightly used but in excellent condition. Box 3588

½ yd. LS Hendrix drag bucket all new fittings a bargain at $345. A ½ yd. Page type RMS perforated used for demonstration only $295. A one yd. type TS Hendrix new teeth fittings and drag chains a steal at $495. A ¾ yd. Owen barge type clamshell bucket completely rebuilt yours for $995. A 1¼ yd. Page type RC less than 60 days old sacrifice for $1465. The Bucket Mart, Inc., 3400 Federal Hwy., Ft. Lauderdale, Florida. Phone: Jackson 3-1777.

Four Bucyrus-Erie 42-T electric blast hole drills, serial numbers 51063, 51064, 51065 and 51066; shipped April 1948; for AC 440/3/60; equipped with 9½" diameter tools with 4x5-7 API joints. Southwestern Illinois Coal Corp., Attn: Mr. Nowers, Percy, Illinois.

Set 54-B dragline equipment consisting of: 70' boom, counterweight "C" 10,000 lbs., high A-Frame; but less: C69 A-Frame pin, JR26 boom suspension sheaves, C44 A-Frame yoke, C1 suspension sheave, C68 yoke spacer. $4500, FOB Steamboat Springs, Colorado. Box 3591

Complete front end for 1201 Lima shovel; 37' boom, 26' dipper handle; 3 yd. Esco bucket, dipper trip sprockets and chain; excellent condition; priced to sell. Midwest-Radiant Corp., Millstadt, Ill.

Shovel front attachment for a 37-B, serial number 22596; this shovel body is in excellent condition and we are offering it for sale, f.o.b. Dallas, Texas at $2,500. Browning-Ferris Machinery Co., 305 Exposition Avenue, Dallas, Texas.

New 18" dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 vane runner; spare liners. Box 3587

Rubber cable vulcanizer No. 3 manufactured by Mines Equipment Company for operation on 115 volt, 60 cycle current; has Type A mold suitable for vulcanizing rubber cable having outside diameter of 2", mold is 30" long; excellent condition, used twice; located at Universal Atlas Cement Company Plant, Fairborn, Ohio. Contact J. J. Hefferman, Purchasing Agent, Universal Atlas Cement Co., 100 Park Avenue, New York, New York.

EQUIPMENT WANTED

Wanted: Good used shovel front with rock dipper for 22-B Bucyrus-Erie. Brandeis Machinery & Supply Company, P. O. Box 906, Paducah, Kentucky.

If you are Buying or Selling Used Equipment this is the place to let the Excavating Industry know about it.

Notes . . .

Continued from page 62

ice all Le Roi products. The company manufactures engines, air compressors, mixers, rockdrills, and loaders for agriculture, petroleum, construction, and manufacturing industries as well as the government. New products, models, and markets have been developed during the past two years. An engineering graduate of the University of Wisconsin, Heuser joined Le Roi in 1939. In 1941 he became a member of the Ampco Metal sales organization and served as manager of their Pittsburgh district and later the Los Angeles district. In 1946 he rejoined Le Roi as assistant to the general sales manager. In accepting a vice presidency, Heuser vacates the post of engine division sales manager.

Lincoln Electric Co., Cleveland, O., has appointed Robert J. Hirsch as district sales manager to head the company's North Haven Office. He will be responsible for the sales of Lincoln arc welding machines and electrodes throughout Connecticut. Hirsch is a graduate of Cornell University and also attended Fenn College. After completing his training in the Lincoln plant in Cleveland, Hirsch served as an application engineer. He comes to his new post after five years' experience in the Pittsburgh District . . . Richard P. Lindgren has been appointed to the position of district manager in Moline, Ill. He will be in charge of sales in the northwestern Illinois and central and eastern Iowa areas. Lindgren joined Lincoln Electric in 1947 after flying in the Naval Air Corps and receiving a degree in mechanical engineering from the Carnegie Institute of Technology. In 1949, after serving as a sales engineer in the Boston District, he was made manager of the North Haven, Conn., sales office where he served until his present appointment.

Page Engineering Co., Chicago, Ill., has announced that Spreitzer, Inc., U. S. No. 30 West, Cedar Rapids, is the new Iowa distributor for Page Automatic dragline buckets, chains, and accessories. The dealer firm has complete service facilities for Page buckets. H. J. Spreitzer, president of the Cedar Rapids firm, will direct sales. This exclusive dealership will cover the eastern half of Iowa.

Spencer Manufacturing Co., Spencer, O., has appointed Leon W. Fisk as sales manager. Fisk will direct the sale and distribution of the company's axles and drive shafts throughout the trucking and earthmoving equipment industries. He will headquarter at the organization's executive offices in the Keith Bldg., Cleveland.

Tapecoat Co., Evanston, Ill., has announced the opening of a West Coast office in the San Francisco area to serve California, Oregon, Washington, Idaho, and Nevada. The new office will be headed by L. R. "Bob" Zito, appointed district manager with headquarters at 16051 Via Toledo, San Lorenzo, Calif. For the past two years, Zito has served as district manager in the New York area, supervising sales and service in 12 eastern states.

Wayne Crane Division, American Steel Dredge Co., Inc., Fort Wayne, Ind., recently announced that Felix Sweeney has been appointed sales manager. Prior to this appointment Sweeney was eastern district sales representative, and before that represented Wayne Crane in the midwest district.

Worthington Corp., Harrison, N. J., recently effected distributorship agreements with Jackson Machinery Co., Inc., of New Orleans, La., and Pecaut Industrial Supply Co., Sioux City, Ia. Both firms will handle the corporation's construction equipment line including portable compressors and contractors tools manufactured at the Holyoke Works and truck mixers, pumps, and portable mixers manufactured at the Plainfield Works. Territory Jackson Machinery Co., Inc., will cover takes in all of the Parishes in the State of Louisiana which include and lie south of Beauregard, Allen, Evangiline, St. Landry, Pointe Coupee, West Feliciana, East Feliciana, St. Helena, Tangiapahoa, and Washington. Counties in the State of Iowa covered by Pecaut include Lyon, Osceola, Dickinson, Sioux, O'Brien, Clay, Plymouth, Cherokee, Buenavista, Woodbury, Ida, Sac, Monona, Crawford, and Carroll.

Wire Rope at Work—A sign of progress, a sign of the times, was this construction scene on the Delaware River Extension of the Pennsylvania Turnpike. As a means of bypassing Philadelphia traffic and providing a link with the neighboring New Jersey Turnpike, the new extension should be a boon to motorists, both eastbound and westbound.

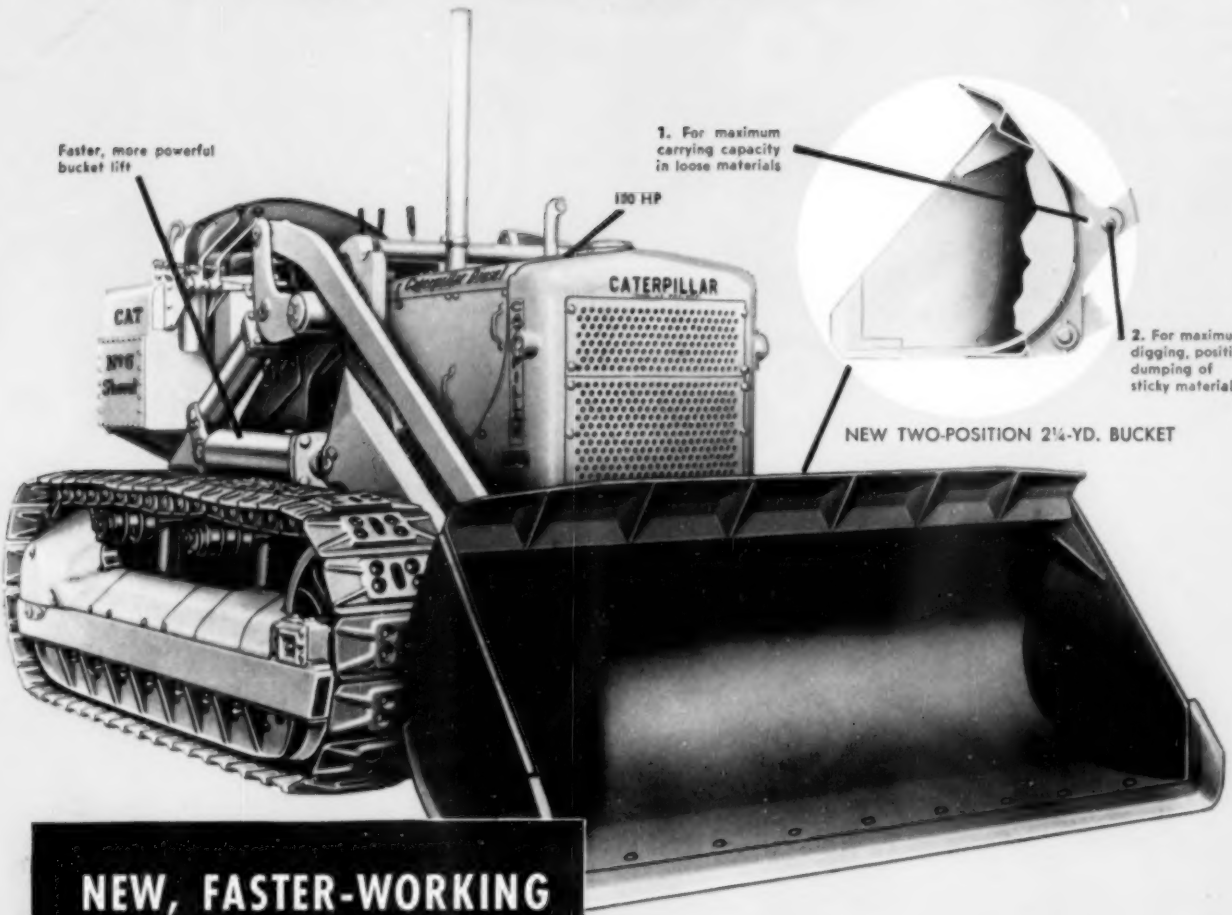
The girder shown in the photograph, the one being lifted into place, is part of a new bridge that crosses the Schuylkill River at Bridgeport, Pa. Weighing approximately 37 tons, this structural member was handled by a big stiffleg derrick rigged with Bethlehem wire rope. Here the job called for strong Purple Strand, the rope that tames the meanest lifts—and the hefty girder proved no problem at all.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

ANNOUNCING


Faster, more powerful bucket lift
100 HP
CATERPILLAR
CAT
1. For maximum carrying capacity in loose materials
2. For maximum digging, positive dumping of sticky materials
NEW TWO-POSITION 2¼-YD. BUCKET

NEW, FASTER-WORKING NO. 6 SHOVEL at no increase in price

NEW POWER—the CAT* Diesel Engine now gives you 100 HP, an increase of approximately 25 per cent—and you get it with Caterpillar ruggedness and economy.

NEW 2¼-yd. BUCKET gives you 12½ per cent more capacity, gets heaping loads, dumps cleanly. Exclusive two-position feature gives maximum use of bucket capacity in *any* material: rear position for clean, fast dumping of sticky materials; forward position for carrying heaping loads of loose materials.

GREATER LIFTING POWER and speed with new hydraulic pump: its pressure is stepped up more than 40 per cent for fast, positive lifting action under *all* load conditions.

These extra values cost you no more in price!

These useful attachments increase your job range: skeleton rock bucket, quarry bucket, heavy-duty narrow bucket and bulldozer blade.

Versatile new No. 6 Shovel is built to do more work at less cost

Weight distribution, engine horsepower and bucket capacity are carefully balanced so that the tracks *stay* on the ground for maximum stability.

Your Caterpillar Dealer will be glad to demonstrate the new No. 6 Shovel *on the job*. See him today. And count on him for fast service and genuine factory parts.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE